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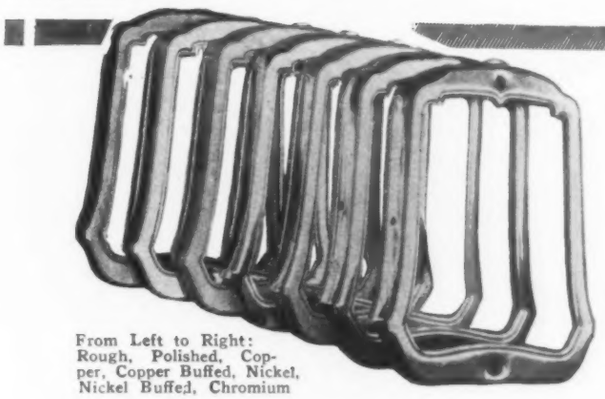


From Left to Right: Rough, Polished, Copper, Copper Buffed, Nickel, Nickel Buffed, Chromium

Chromium Plating

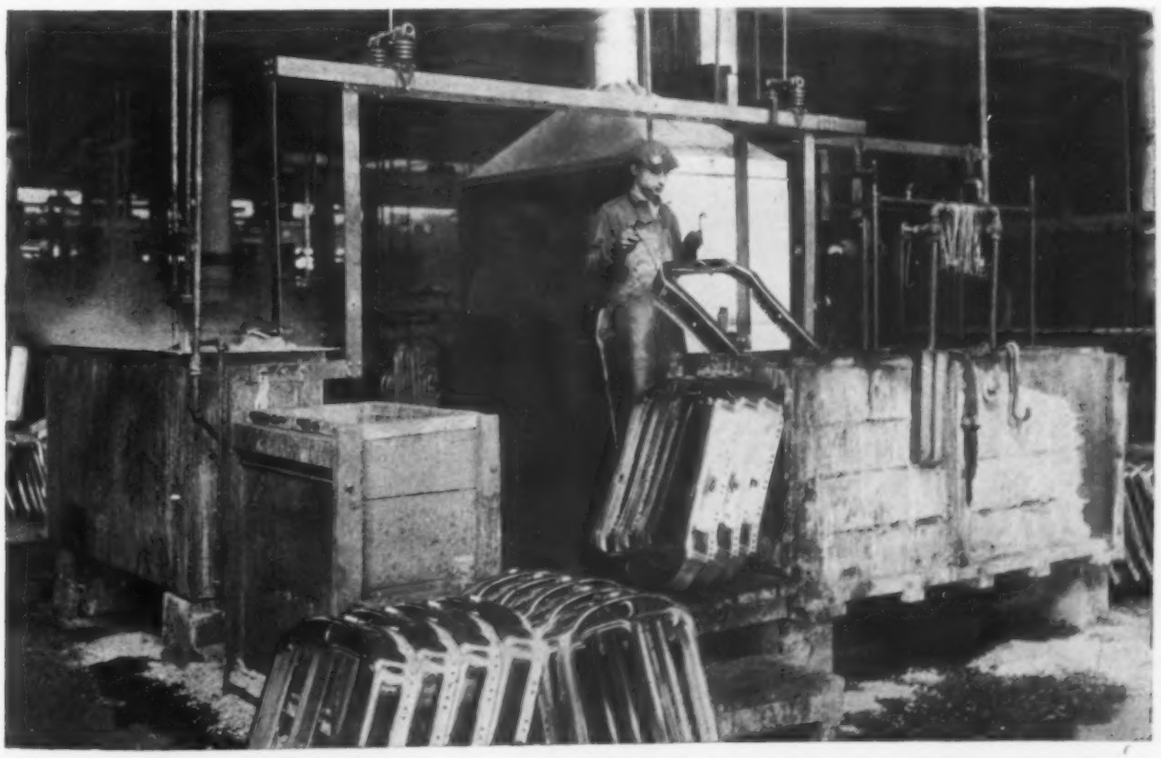
Applied on a Production Basis for Various Automobile Parts at Olds Motor Works

CHROMIUM plating has been developed on a commercial and production basis by Olds Motor Works, manufacturer of the Oldsmobile Six, in cooperation with the General Motors Corporation. At the present time all radiator shells and caps, bumpers, motometers, gear shift levers and crank-hole caps on Oldsmobiles are chromium plated and this method will be used on all Oldsmobile parts formerly nickeled as quickly as necessary arrangements can be completed.

What is claimed for the chromium plate is high luster that requires no polishing, besides retaining its original brilliancy almost indefinitely. Being harder than nickel, its wearing qualities are regarded as practically unlimited. Production cost is said to be about the same as nickel plating.

The idea of plating with chromium is not new, but in the present development the effort has been to establish the quantity production required in automobile manufacture. About a year ago experiments were started by W. M. Phillips, a member of the staff of the works managers' committee of the General Motors Corporation. The problem was to obtain an anode that was not soluble in chromic acid, a chromic acid solution that would give continuous good results, and chemicals that could be obtained in sufficient quantities at reasonable prices.

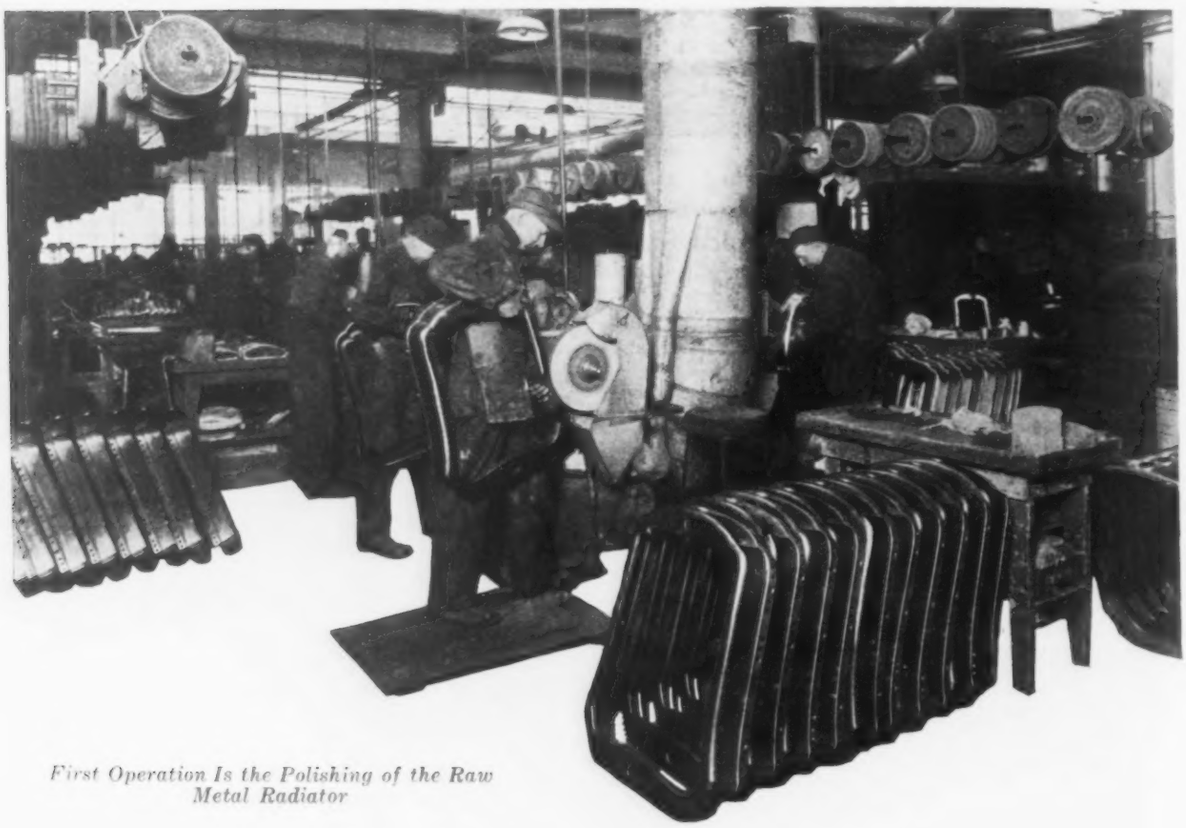
Literally hundreds of solution formulas, it is stated, were compounded and many types of anodes and varying electrical amperages were tried. During this development stage the plating department of the Olds



Chromium Plating Unit, Chromium Tank Being at Center, With Hood Ventilator; Cleaning Tank at Left; Final Wash Tank at Right

Motor Works was called on to help and the actual tests were made there under the direction of George Fry, foreman of the plating department, in conjunction with R. W. Redmond, chemist of the Oldsmobile metallurgical department and chemists of the General Motors Corporation's research laboratories.

One of the tests to which the plating was subjected was to place it in a salt spray formed by injecting a 20 per cent solution of common salt under pressure into a cabinet containing the plated part. Under this test nickel plating, it is said, usually resists corrosion only 10 to 20 hr. Chromium-plated articles were kept in the bath, in some cases, as long as 120 hr. before any signs of corrosion developed. Eighty hours under this salt spray are taken to indicate a much longer life for the plating than the average life of any automobile.



First Operation Is the Polishing of the Raw Metal Radiator

The first steps in chromium plating follow the identical process of nickel plating. The radiator shell or other part to be plated is taken as it comes from the stamping machine and is polished on emery wheels to give it as smooth a surface as possible. It then is placed in a cleaning solution. This cleanser is a special formula developed by General Motors and Oldsmobile and it differs but little from standard cleaners marketed under trade names.

This first cleanser bath has a small amount of copper salts added to it. After the article has been taken from the cleanser it is placed in a copper plating tank containing a solution with a copper cyanide base and high electrical amperage. High amperage is used to give a smoother, closer grain to the copper coating. This tank is fitted with an automatic conveyer set to take 20 min. for a trip through the solution.

After being removed from the copper plating tank, the part then is washed in hot water to remove all trace of the copper cyanide solution. At this point in nickel plating, the article then is buffed, but this step is eliminated in the chromium process and the part is taken from the hot water wash direct to the nickel plating tank, which contains a hot chloride solution and nickel anodes. A conveyor similar to that used in the copper tank carries the part through the process in 40 min., after which it is buffed. Up to this time the only difference between the chromium and nickel plating processes is the elimination of the buffing operation after the copper plating has been completed.

Following the buffing, the article is again run through a cleansing bath and then dipped in hot water and placed in the chromium plating tank, where it is left a short time. The chromium tank is of steel construction and is equipped with a ventilating hood to carry off the chromium acid fumes. This tank and the tanks used for cleansing and washing are located in close proximity, so that one man takes care of both processes.

After being removed from the chromium solution the part is given a cold water rinse and the operation is complete. A conception of the luster of the chromium plate can be gained from the fact that no final buffing or polishing is required. In fact, the chromium plate is found to be so hard that buffing would have no effect on it. A glass-like finish describes in a way the new plating surface. While the thickness of the plating is 0.0006 in., the hardness, it is claimed, makes it virtually impossible to wear off the finish.

The nickel plating is used both to give a smooth surface for the chromium finish and to afford a white ground color. Chromium over the nickel gives a clear blue-white finish of surprising brilliancy. All that is required is an occasional wiping with a rag to remove dust and water marks. It is not affected by water, alkali or any climatic condition.

After the chemical and mechanical details of the

Copper Plating in Rear; Nickel Plating in Foreground

new process had been successfully worked out and before production started, Mr. Phillips and his staff made an exhaustive investigation of the markets, both here and in Europe, of the raw materials required. They learned that there were ample supplies and that, with an increased demand permitting larger production of the materials required, the prices probably would be lower in the future. The Olds Motor Works now is on a full production basis with the new plating process.

New Use for Stainless Iron

A new and highly interesting use for stainless or rustless iron has recently come to light. In the synthetic process of making nitric acid, as developed by the Fixed Nitrogen Research Laboratories, at Washington, certain containers are necessary in producing the acid on a commercial scale. A large American company, which is about to install this process on a fairly large scale, has found that stainless iron is entirely unaffected by any phase of the nitric acid process. They have therefore decided to equip a new plant entirely with containers and other apparatus made of stainless iron for the carrying on of the process. The amount of money involved for this one item alone is said to run into large figures.

Chromium Supplies in 1925

Shipments of chromium ore from domestic mines, containing at least 45 per cent or more of chromic oxide, in 1925 totaled only 108 gross tons, according to figures compiled by the United States Bureau of Mines. These shipments came from two mines in California and one in Maryland. The total production last year was given as 157 tons and in 1924 as 233 tons.

Imports of chrome ore last year were 149,739 tons, the major part of which, 96,664 tons, came from various mines in Africa (Rhodesia), with 29,830 tons from Cuba and 12,533 tons from Greece. The 1925 imports compare with 118,343 tons in 1924. More than seven-tenths of the world's production now comes from Rhodesia in Africa.

Buffing Is Not Practiced After the Copper Plating but After the Nickel Plating

Making Headway in Foreign Trade

United States Now a Seasoned Participant, with Business Well Above the Pre-War Volume, President Farrell Tells Charleston Convention

BY JAMES A. FARRELL

IN discussing the outlook for foreign trade, we must consider the condition of the world in general which furnishes the markets for our foreign trade; what that trade is today, or rather what it was in the immediate past, and what constitutes the basis of its future growth and development.

Obviously we cannot take the time to examine in detail the existing situation in each of the 80 to 100 territorial divisions of the world which constitute our separate markets. I shall rather content myself with calling your attention again to the fact that the world as a whole continued last year the economic recovery and improvement which has marked its course steadily since the close of the war. It is evident in several ways that the process of accumulation which was interrupted for four years is gaining momentum each year by the added force of its own annual savings. Production is on the upgrade in all the industrial nations, and most of them have brought their international commerce nearly up to its pre-war level.

Nearly Back to Pre-War Volume

The figures of 33 exporting nations, not including the United States, for the last fiscal year, showed them to be within 7 per cent of their pre-war volume of trade. The United States and Canada alone of all the trading nations have made a substantial increase over their pre-war status. If our figures are included in this calculation, the world as a whole is shown to be only 2 per cent under its pre-war volume at the close of the last fiscal year. There are some indications that this deficiency will be more than recovered in the current year. One such indication of special significance is the increased volume of raw material imports, both by the United States and by several of the industrial nations of Europe. That, of course, evidences an impending increase of production and consequently of consuming power.

Consideration of our trade for 1925 discloses some striking facts. It was larger both in value and in volume than in any previous normal year. There were a few years influenced by exceptional war or post-war conditions, when it represented a larger number of dollars, but those dollars represented so much less purchasing power that its physical volume was actually less then than now. Reasonable prices tend to extend commerce, maintain production, lessen costs and increase consumption at home and abroad. Department of Commerce figures show a net gain of more than 1,500,000 tons in volume last year, imports having increased by 2,361,000 tons while exports fell off 823,000 tons. The tonnage figures, when issued, are likely to show a total for the year well in excess of 93,000,000 tons.

Our Large Exports of Manufactures

Turning from the volume and value of this trade to an examination of its character, we find that of exports aggregating $4,818,271,000, the products of manufacture constituted almost 64 per cent and raw materials less than 30 per cent. These products of our industry comprise finished manufactures, which by themselves furnished a little over 38 per cent of the total, semi-finished manufactures, and manufactured foodstuffs.

It is significant that finished manufactures continue to head the list of five great groups into which the Department of Commerce divides our exports. Raw materials are second, and foodstuffs, which for so many years held the right of the line, now bring up the rear.

There is an illuminating fact in the figures of raw material exports. It is that unmanufactured cotton constituted more than three-fourths of that group. It furnished 22 per cent of our total exports, and stands first in the list of commodities exported. All other raw materials combined furnished only 7 per cent of our total exports.

Heavy Imports for Industry

Contrasting with this export showing is our import of materials for industry, crude and semi-finished. They were 58½ per cent of our total imports. To such an extent has our industrial establishment as a whole developed, that it is dependent, for the fulfillment of the fundamental condition of prosperity—occupation—upon a steady inflow of raw materials from foreign sources, aggregating at least $2,000,000,000 a year in value, and constituting three-fifths of our total imports. Curtailment of such supplies or abnormal prices for them inevitably affect industrial activity in all countries and in this connection it is realized that national trade is the basis of national livelihood.

The first 19 items on our export list last year account for 60 per cent of our total exports. They included all the factors which contributed 1 per cent or more to our total. Of these 19 items, only five were crude materials, including raw cotton, tobacco, wheat, coal and crude oil. The remaining 14 were either finished manufactures, such as automobiles, cotton cloth, wheat flour and agricultural machinery, or articles partly processed, such as refined oils, sawed lumber, leather and steel products.

The next 83 items on the list furnished in the aggregate only 24 per cent of our total exports, their totals ranging in value from $25,000,000 down to $6,369,000, which was the figure for rubber footwear.

Then follows an unnumbered and almost innumerable group classified as "all other exports," constituting 15 per cent of our total. Not an item in this list was nearer the top than 100, or contributed as much as one-tenth of 1 per cent of the total. Yet their aggregate value was $719,970,000.

Our Larger Ideas of World Trade

In these figures we have a glimpse of what has been going on in the way of development of our foreign trade in the last 10 or 15 years, and of what is before us for the next decade. Here stands clearly revealed the great change that has taken place since the placid days before the war. Then foreign trade was incidental and occasional with all but a relatively small number of our manufacturing concerns. Then it was only here and there that a manufacturer gave steady thought to the advantages of sharing in foreign markets, and our overseas commerce was spoken of slightingly as representing "only 4 per cent of the total." Now far and wide throughout this country manufacturers, agriculturalists, bankers and railroad and steamship men are awake to the importance of this development, eager to take their share and all building up the steadily increasing total.

We are reaching the stage of expanded interest and participation which tends to diminish the risk of the whole because of its widened distribution. No doubt

there will be setbacks, local depressions, and situations unfavorable to a single line over an extended period, or unfavorable to several lines over a shorter time. We have developed a mass interest and participation in international commerce which spreads and reduces the shock of individual misfortune or lack of success.

The complaint is occasionally heard that "foreign trade is declining," when in fact only an individual or a concern has been affected. There were several hundred bank failures in the United States last year, but the banking establishment of the United States as a whole has not ceased doing business. Some exporters of flour, for example, have complained recently that their business is dead beyond possibility of reviving it. The export figures for last year show, however, that wheat flour was number ten on the list, with shipments aggregating over $85,000,000. A hundred other lines which did not contribute nearly so large a proportion of our exports are all progressing, anticipating improved business and eagerly preparing for it.

Problems Never So Well Studied

This development of our trade, of which I have spoken, is the result of intensive study of the whole subject which thousands have been making in recent years. It is one of the aims and purposes of such meetings of men engaged in business as this national foreign trade convention. The National Foreign Trade Council has steadfastly encouraged the smaller manufacturers in finding new markets and urged a greater diversification of products for sale as distinguished from the old method of exporting so-called staples. The council is by no means alone in its work. There are many organizations and groups all over this country, at interior points of production as well as at seaboard ports of shipment, which have made exhaustive study of principles and procedure in foreign trade. Discussion, debate, explanations and consultation on perplexing or difficult problems have gone on unceasingly. Experts in a line, a field, a market, in every phase of this interesting but sometimes complicated business have freely given their advice to those of less experience.

Today we are seeing the result. The programs of these conventions are no longer filled with eager, self-searching criticism. The speeches condemnatory of packing, quality, etc., disappeared from our sessions because we have become thorough in study and practice, competent in manufacturing, merchandising and shipping. The old criticisms of American methods are seldom heard of, and quality is understood. Our consular service is on a higher plane and our Department of Commerce is efficiently managed.

Helping Foreign Customers

Salesmanship has had its share in this advance, and back of that the steadying and solidifying of a definite foreign trade policy. We are giving practical effect to the sound and helpful belief that the best way to maintain our own success is to help our customers to succeed on their part in the distribution of our commodities. We have learned to study the problems of our customers in other lands, and to apply our experience and ingenuity in their assistance wherever possible. It is the high art of service put to effective, practical and profitable use.

There is still plenty to do. We must not fall into the error of thinking that because we have reached a creditable position by hard work and intensive application we can remain there without further effort.

America Best Equipped in Production

Of the four great factors which contribute essentially to the maintenance of our foreign trade—production, communication, finance and transportation—we are equipped best in the first. Improvement has been made in the other three, and you will hear something of that improvement, especially as to communication and finance at this convention. As to transportation, our railroad systems have attained a high efficiency. Attention is now being given to the development of our inland waterways which will supplement our rail transportation in keeping pace with the economic growth of the country and in assisting to solve the problem of economic distribution.

Not Alone in Shipping Depression

Our maritime situation, in certain important respects, is not much different from that of other countries. There is worldwide depression in the shipping business. It is not confined to the United States. Generally speaking, the fleets of the world are carrying cargoes at less than the cost of operation. The tonnage that was inadequate for war service, or for the period immediately after the armistice, was much too large for the restricted trade which followed:

Despite all the handicaps, economic and otherwise, under which shipping is conducted, more ships are now operating under the American flag and a larger proportion of American cargo is carried in American bottoms than was the case before the war. More trade routes are served by privately owned as well as Government vessels, but until there is an improvement in the world freights the business as a whole is unlikely to reach the substantial measure of financial success which is necessary if new tonnage is to be built to replace obsolete craft.

Meantime the great surplus tonnage of all nations is wearing out faster than replacement is being made and the industry is gradually reaching a point where the supply of tonnage will more nearly approximate cargo opportunities. Ever since the beginning of the war the world has been living on a lower plane than had been its custom. It is gradually getting back to a pre-war status of production and consumption and in that lies the hope of betterment. The foreign trade outlook cannot be accurately forecast, but there are signs of recuperation and strengthening in the whole industrial fabric.

THIS address, which analyzes the situation in our foreign trade and gives reasons for the progress the United States has been making, was delivered at the opening session of the National Foreign Trade Convention at Charleston, S. C., on Wednesday, April 28. President Farrell of the Steel Corporation has been chairman of the National Foreign Trade Council for twelve years, or ever since the council was organized at Washington in 1914. He has been the leading figure in all the thirteen conventions. These have been held at widely scattered points—two on the Pacific Coast, two at New Orleans, four on the Atlantic seaboard and five at interior points. An address by Mr. Farrell has been a feature of every convention program. He has dealt with many factors of the export problem—the relation of our industrial capacity to foreign trade, foreign investment of American capital, cooperation in trade after the war, also various phases of the American Merchant Marine situation as they have developed in the years since the war. All these addresses have shown Mr. Farrell's unusual grasp of shipping and world trade questions in all their wide ramifications.

Manganese Ore Output Is Large

It Easily Can Exceed Consumption Now That Mining Is Resumed in Russia and Supplies Are Coming From New Sources

BY PAUL M. TYLER.

THERE is an old-fashioned rule that what goes up must come down. The essential truth of this homely saying has been widely lamented with respect to metal products, most of which came down more readily from their war-time levels than other commodities. While certain ferroalloys, and particularly ferromanganese, long resisted this tendency, cheaper ferromanganese is now an established fact, the recent spectacular drop from $115 to $90 or less placing it substantially in line with other iron and steel products.

The latter figure is cheap, not only relative to prices that have prevailed for the last year or two, but also relative to the cost of production. Imported manganese ore is still quoted at above 40c., which means about 65c. a unit delivered at the furnace, duty (22.4c.) and transportation paid. Since it commonly takes 110 units of manganese in ore to provide the 80 units of manganese contained in a ton of ferromanganese, the metallic mixture costs nominally 110 × $0.65, or $71.50. Adding to the cost of roughly 2½ tons of coke and considering that the expense of running a furnace is vastly greater for ferromanganese than for pig iron, no further calculation is needed to indicate that the making of ferromanganese for sale is not at present a profitable business in the United States.

MR. TYLER is known for his investigations for the Tariff Commission into the competitive line-up of the steel industry in various European countries. He takes the view in this article that the potential supply of manganese ore at present prices is in excess of probable demand. As Brazilian output falls, that from Russia promises to reach large proportions and the new mines of the West Coast of Africa have turned out nearly twice as much as Brazil.

Competition among domestic producers is one cause for the present situation. In pre-war time, when independent steel makers were supplied wholly from Europe, a price war between British and German producers brought the price of the alloy to less than $40 and even to $35 per ton, delivered at American ports. The United States Steel Corporation was making ferromanganese then for its own use and has continued to do so; but it has almost never supplied it regularly to other consumers.

New Domestic Competition

During the war, however, a number of new producers appeared, only to drop out one by one later when British supplies started to flow more freely again. The Lavino Furnace Co. was the only one of these merchant operations that survived, and for almost five years the domestic supply came mainly from this firm or from Great Britain. Later, however, the Electrometallurgical Sales Co. entered the field, and still later the Bethlehem Steel Co., which, like the United States Steel Corporation, had been making ferromanganese for its own use, began to offer it for sale. The struggles of these competing firms to get business from one another and from the English plants precipitated the drop in price.

A somewhat similar situation obtains abroad where new producers of ferromanganese, especially in Poland, are causing some anxiety to the older firms in England, Germany and Norway.

The price of $90 a ton, which was reached early in April, is equivalent to $56.40, without duty, or roughly 40 per cent higher than the price in the so-called "normal" period of 1913. It is in close harmony with the index of 137 calculated by the United States Bureau of Labor Statistics for all iron and steel products, but very much higher than the index of 113 for nonferrous commodities. In common with most metals, however, ferromanganese is now cheaper relative to its position in 1913 than other commodities, the average price of which in December, 1925, was 56 per cent above pre-war levels as measured by 1913 averages.

Manganese Ore Prices Still High

Manganese ore, on the other hand, even as measured in terms of other commodities, still costs more in the world's markets than it did in 1913. The present quotation of manganese ore at the Atlantic seaboard is 2¼ times pre-war, having increased from 17½c. to 40c. or more per unit, to which must now be added the duty of 22.4c. per unit under the Tariff Act of 1922, which applies to imports from all countries except Cuba.

Prices are fixed by supply and demand and, since world demand has varied relatively little and since supplies were interrupted by the war, prices have followed merely their natural course. Since roughly one-half of the pre-war supply came from Russia, the return to normal was retarded after the war by the unsatisfactory political situation in that country.

Less Call for High-Grade Ores

The demand for manganese ore is apparently less now than in 1913. Considerably more than 90 per cent of the consumption is in the steel industry and, since 1913, the world production of steel has thus far failed to exhibit a definite upward trend. The rapid growth in American output has largely been offset by declines in other countries, so that 1925 was the first post-war year in which the world total substantially exceeded that of 1913. Future growth in steel production is in part discounted by greater economies in the use of manganese.

From the angle of ore supplies diminished requirements result from the fact that high manganese pig iron (which in this country is made from manganiferous iron ores rather than from manganese ore) is displacing ferromanganese and spiegel more and more both in foundries and in steel works. Moreover, manganiferous iron ores are being substituted for manganese ores which were formerly used extensively in Europe for bringing up the manganese in pig iron. There is a large actual saving in manganese in making steel by the open-hearth as compared with the Bessemer process, especially the basic Bessemer. A much larger fraction of the world's steel now comes from the United States, where the open-hearth process is largely in vogue, and this process is now used more extensively abroad because of the greater employment of scrap and, in Germany, because of the desire to get away from dependence upon Lorraine ore.

Present Needs a Half Million Tons Below Pre-War Production

On the basis of a probable average steel output of 100 million tons annually for the next few years, and assuming 13 lb. of manganese (i. e., 16 lb. of ferro-

manganese) will be used per ton, the world's requirements of manganese for steel making are approximately 600,000 gross tons. After allowing for metallurgical losses (which may be reduced because of the greater use of the electric furnace), this represents 1,600,000 tons of 50 per cent ore. Chemical uses and the increased demand for dry batteries may increase the total yearly requirements to a maximum of 1,750,000 gross tons.

This figure compares with a pre-war production of 2,147,000 tons in 1913, of which Russia alone supplied 1,202,000 tons, the remainder coming principally from India and Brazil, with only scattering amounts from other countries. As a result of the war, manganese deposits in other parts of the world have been opened. There are persistent rumors that still other deposits, especially a large field in Australia, soon will be provided with transportation facilities that will enable them to be worked. Even without these probable additions, the potential supply of manganese ore at present prices exceeds probable demands.

Russian Output Soon May Exceed Pre-War

Wide publicity has been given the exclusive contract entered into on June 1, 1925, between the Union of Soviet Socialist Republics and the Harriman interests. The essence of this contract is that, in return for installing modern equipment for economically mining, washing and transporting the ore, the American company is conceded a monopoly of production of ore for export from the Chiaturi (Caucasus) district. The contract, which calls for a minimum exportation of 16 million tons in 20 years, virtually assures that exports shall soon equal the pre-war rate. The lessees are obligated to install, within five years, facilities for shipping 2,000,000 tons annually, or substantially more than the total probable consumption of the world.

The Soviet Government never was able to produce more than one-half the 1913 output, but the Chiaturi field under competent management is fast regaining its place as the dominant factor in the world situation. Almost from the beginning of operations last summer production exceeded the contract rate (only 300,000 tons) set for the first twelve months, and a million tons is expected for the current year.

Caucasus Reserves Put at 250 Million Tons

Apparently there is no physical obstacle to increasing production beyond any previous record. Reserves are ample for many decades, the most recent Russian estimate placing them at 250 million tons. The ores, which are rich in manganese and free from deleterious impurities, are well liked in all markets. That they can be mined easily appears from the fact that, even in 1923, under Soviet management, the output per employee was about 217 tons (13,000 poods) which, according to European mining standards, is good. In that year costs, especially overhead and concentrating expenses, were unusually high, amounting, if we may credit Russian official reports, to $7.12 per ton (22.29 gold kopecks per pood), or more than 35c. a unit. The cost of mining and washing doubtless will go down materially, but the present operators are obligated to pay royalties which are $3 a ton for metallurgical ore and $8 a ton for chemical ore (peroxide) for the first three years, after which they advance to $4 and $9 a ton, respectively. The $4 rate means a fixed charge of at least 8c. a unit and, in addition to this, the Soviet Government is to receive a share in profits when the price of ore exceeds a specified minimum.

While the Chiaturi mines are the most extensive and the best situated for export, averaging only 100 miles distant from the port of Poti, important manganese deposits are found in several other localities in Russia, notably in the Ural Mountains and in South Russia. Those in the latter region, which comprises the Nikopol district, are situated south of Krivoi Rog in the province of Kherson and extend into the provinces of Ekaterinoslav and Skalevatka.

In 1913 21 per cent of the Russian output was derived from three producing mines in this district. The ore is supplied in two export grades, one containing 50 per cent and the other 47 per cent of metallic manganese. Nominally there is a third grade, averaging 24 per cent, but it is practically unsalable, even locally. This area suffered badly during the Russian civil war, but the mines were eventually opened up again and exports were resumed in 1921. According to the development program of the Soviet, this territory is expected to produce ore at the pre-war rate of 248,000 tons annually by about 1927. It is reported that some 1600 persons are employed at the mines and production in the summer of 1925 attained an average of 30,000 tons a month, of which about one-half was exported.

Very little Nikopol ore has ever been shipped to the United States; it is normally exported to Germany, England and other European countries. While much better situated than the Chiaturi deposits for supplying the limited requirements of the Russian iron and steel industry, these deposits are almost twice as far from seaports, the average distance being, roughly, 200 miles.

While the Nikopol deposits are nominally still controlled by the Southern Ore Trust, this Soviet organization agreed early in 1925 to give the exclusive sale of the ore to a German concern which helps finance operations—at least to the extent of advancing 40 per cent of the value of ore produced. This arrangement should stimulate production.

It is commonly conceded that the deposits about Krivoi Rog cannot be mined as cheaply as those of the Caucasus. Nevertheless, official figures, as recently published in the *Russian Review*, show costs in 1923 to have been lower in the former region. The figures, which are translated into American units below, are of some interest, for they show the approximate distribution if not the actual total of costs of production in the two principal Russian localities:

Cost of Manganese Ore Production in Russia, 1923—Gross Tons

	Nikopol	Chiaturi
Wages	$1.66	$1.27
Materials	0.94	0.89
Fuel	0.14	....
Other expenses	1.01	1.71
Concentrating	2.00	3.25
Total	$5.75	$7.12

Russian exports promise shortly to equal, if not exceed, pre-war. While recently these have come partly from stocks, there is no cause to question the reported production of 531,000 gross tons for the fiscal year ended Oct. 1, 1925; this compares with the following official data:

Russian Production by Districts—Gross Tons

	1923–4 [1]	1922–3 [1]	1913
Chiaturi	320,000	148,400	954,000
Nikopol	105,000	64,400	248,000
Totals	425,000	212,800	1,202,000

[1] Fiscal years ended Sept. 30.

Better Transport Facilities in India

Next to Russia, India has always been the principal producer of manganese ore and, after conditions in the Caucasus became abnormal (and often before) the Indian output has been larger than that of any other country. Because of its marked ability to expand when required, India has been called the balance wheel of the industry. Mining began in 1892 and production reached a maximum of 900,000 tons in 1907. Even the British Imperial Institute reported in 1918 that the richer Indian ores were becoming less plentiful and authorities, not so competent, have declared that the output was definitely on the wane. Latest reports, however, promise the early completion of a standard gage railroad to replace the unsatisfactory transportation system which heretofore has been the only link between the large deposits of the central provinces and the sea. About a year ago the local government withdrew some of the restrictions that had hampered mining, although licensees must still turn over 25 per cent of their net profits as an extra tax in addition to fixed royalties.

Evidently, therefore, India is not yet out of the running. The ore, while it carries a trifle too much iron to be used alone in making 80 per cent ferromanganese, is lower in silica than that from the

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BY JAMES A. FARRELL

IN discussing the outlook for foreign trade, we must consider the condition of the world in general which furnishes the markets for our foreign trade; what that trade is today, or rather what it was in the immediate past, and what constitutes the basis of its future growth and development.

Obviously we cannot take the time to examine in detail the existing situation in each of the 80 to 100 territorial divisions of the world which constitute our separate markets. I shall rather content myself with calling your attention again to the fact that the world as a whole continued last year the economic recovery and improvement which has marked its course steadily since the close of the war. It is evident in several ways that the process of accumulation which was interrupted for four years is gaining momentum each year by the added force of its own annual savings. Production is on the upgrade in all the industrial nations, and most of them have brought their international commerce nearly up to its pre-war level.

Nearly Back to Pre-War Volume

The figures of 33 exporting nations, not including the United States, for the last fiscal year, showed them to be within 7 per cent of their pre-war volume of trade. The United States and Canada alone of all the trading nations have made a substantial increase over their pre-war status. If our figures are included in this calculation, the world as a whole is shown to be only 2 per cent under its pre-war volume at the close of the last fiscal year. There are some indications that this deficiency will be more than recovered in the current year. One such indication of special significance is the increased volume of raw material imports, both by the United States and by several of the industrial nations of Europe. That, of course, evidences an impending increase of production and consequently of consuming power.

Consideration of our trade for 1925 discloses some striking facts. It was larger both in value and in volume than in any previous normal year. There were a few years influenced by exceptional war or post-war conditions, when it represented a larger number of dollars, but those dollars represented so much less purchasing power that its physical volume was actually less then than now. Reasonable prices tend to extend commerce, maintain production, lessen costs and increase consumption at home and abroad. Department of Commerce figures show a net gain of more than 1,500,000 tons in volume last year, imports having increased by 2,361,000 tons while exports fell off 823,000 tons. The tonnage figures, when issued, are likely to show a total for the year well in excess of 93,000,000 tons.

Our Large Exports of Manufactures

Turning from the volume and value of this trade to an examination of its character, we find that of exports aggregating $4,818,271,000, the products of manufacture constituted almost 64 per cent and raw materials less than 30 per cent. These products of our industry comprise finished manufactures, which by themselves furnished a little over 38 per cent of the total, semi-finished manufactures, and manufactured foodstuffs.

It is significant that finished manufactures continue to head the list of five great groups into which the Department of Commerce divides our exports. Raw materials are second, and foodstuffs, which for so many years held the right of the line, now bring up the rear.

There is an illuminating fact in the figures of raw material exports. It is that unmanufactured cotton constituted more than three-fourths of that group. It furnished 22 per cent of our total exports, and stands first in the list of commodities exported. All other raw materials combined furnished only 7 per cent of our total exports.

Heavy Imports for Industry

Contrasting with this export showing is our import of materials for industry, crude and semi-finished. They were 58½ per cent of our total imports. To such an extent has our industrial establishment as a whole developed, that it is dependent, for the fulfillment of the fundamental condition of prosperity—occupation—upon a steady inflow of raw materials from foreign sources, aggregating at least $2,000,000,000 a year in value, and constituting three-fifths of our total imports. Curtailment of such supplies or abnormal prices for them inevitably affect industrial activity in all countries and in this connection it is realized that national trade is the basis of national livelihood.

The first 19 items on our export list last year account for 60 per cent of our total exports. They included all the factors which contributed 1 per cent or more to our total. Of these 19 items, only five were crude materials, including raw cotton, tobacco, wheat, coal and crude oil. The remaining 14 were either finished manufactures, such as automobiles, cotton cloth, wheat flour and agricultural machinery, or articles partly processed, such as refined oils, sawed lumber, leather and steel products.

The next 83 items on the list furnished in the aggregate only 24 per cent of our total exports, their totals ranging in value from $25,000,000 down to $6,369,000, which was the figure for rubber footwear.

Then follows an unnumbered and almost innumerable group classified as "all other exports," constituting 15 per cent of our total. Not an item in this list was nearer the top than 100, or contributed as much as one-tenth of 1 per cent of the total. Yet their aggregate value was $719,970,000.

Our Larger Ideas of World Trade

In these figures we have a glimpse of what has been going on in the way of development of our foreign trade in the last 10 or 15 years, and of what is before us for the next decade. Here stands clearly revealed the great change that has taken place since the placid days before the war. Then foreign trade was incidental and occasional with all but a relatively small number of our manufacturing concerns. Then it was only here and there that a manufacturer gave steady thought to the advantages of sharing in foreign markets, and our overseas commerce was spoken of slightingly as representing "only 4 per cent of the total." Now far and wide throughout this country manufacturers, agriculturalists, bankers and railroad and steamship men are awake to the importance of this development, eager to take their share and all building up the steadily increasing total.

We are reaching the stage of expanded interest and participation which tends to diminish the risk of the whole because of its widened distribution. No doubt

there will be setbacks, local depressions, and situations unfavorable to a single line over an extended period, or unfavorable to several lines over a shorter time. We have developed a mass interest and participation in international commerce which spreads and reduces the shock of individual misfortune or lack of success.

The complaint is occasionally heard that "foreign trade is declining," when in fact only an individual or a concern has been affected. There were several hundred bank failures in the United States last year, but the banking establishment of the United States as a whole has not ceased doing business. Some exporters of flour, for example, have complained recently that their business is dead beyond possibility of reviving it. The export figures for last year show, however, that wheat flour was number ten on the list, with shipments aggregating over $85,000,000. A hundred other lines which did not contribute nearly so large a proportion of our exports are all progressing, anticipating improved business and eagerly preparing for it.

Problems Never So Well Studied

This development of our trade, of which I have spoken, is the result of intensive study of the whole subject which thousands have been making in recent years. It is one of the aims and purposes of such meetings of men engaged in business as this national foreign trade convention. The National Foreign Trade Council has steadfastly encouraged the smaller manufacturers in finding new markets and urged a greater diversification of products for sale as distinguished from the old method of exporting so-called staples. The council is by no means alone in its work. There are many organizations and groups all over this country, at interior points of production as well as at seaboard ports of shipment, which have made exhaustive study of principles and procedure in foreign trade. Discussion, debate, explanations and consultation on perplexing or difficult problems have gone on unceasingly. Experts in a line, a field, a market, in every phase of this interesting but sometimes complicated business have freely given their advice to those of less experience.

Today we are seeing the result. The programs of these conventions are no longer filled with eager, self-searching criticism. The speeches condemnatory of packing, quality, etc., disappeared from our sessions because we have become thorough in study and practice, competent in manufacturing, merchandising and shipping. The old criticisms of American methods are seldom heard of, and quality is understood. Our consular service is on a higher plane and our Department of Commerce is efficiently managed.

Helping Foreign Customers

Salesmanship has had its share in this advance, and back of that the steadying and solidifying of a definite foreign trade policy. We are giving practical effect to the sound and helpful belief that the best way to maintain our own success is to help our customers to succeed on their part in the distribution of our commodities. We have learned to study the problems of our customers in other lands, and to apply our experience and ingenuity in their assistance wherever possible. It is the high art of service put to effective, practical and profitable use.

There is still plenty to do. We must not fall into the error of thinking that because we have reached a creditable position by hard work and intensive application we can remain there without further effort.

America Best Equipped in Production

Of the four great factors which contribute essentially to the maintenance of our foreign trade—production, communication, finance and transportation—we are equipped best in the first. Improvement has been made in the other three, and you will hear something of that improvement, especially as to communication and finance at this convention. As to transportation, our railroad systems have attained a high efficiency. Attention is now being given to the development of our inland waterways which will supplement our rail transportation in keeping pace with the economic growth of the country and in assisting to solve the problem of economic distribution.

Not Alone in Shipping Depression

Our maritime situation, in certain important respects, is not much different from that of other countries. There is worldwide depression in the shipping business. It is not confined to the United States. Generally speaking, the fleets of the world are carrying cargoes at less than the cost of operation. The tonnage that was inadequate for war service, or for the period immediately after the armistice, was much too large for the restricted trade which followed:

Despite all the handicaps, economic and otherwise, under which shipping is conducted, more ships are now operating under the American flag and a larger proportion of American cargo is carried in American bottoms than was the case before the war. More trade routes are served by privately owned as well as Government vessels, but until there is an improvement in the world freights the business as a whole is unlikely to reach the substantial measure of financial success which is necessary if new tonnage is to be built to replace obsolete craft.

Meantime the great surplus tonnage of all nations is wearing out faster than replacement is being made and the industry is gradually reaching a point where the supply of tonnage will more nearly approximate cargo opportunities. Ever since the beginning of the war the world has been living on a lower plane than had been its custom. It is gradually getting back to a pre-war status of production and consumption and in that lies the hope of betterment. The foreign trade outlook cannot be accurately forecast, but there are signs of recuperation and strengthening in the whole industrial fabric.

THIS address, which analyzes the situation in our foreign trade and gives reasons for the progress the United States has been making, was delivered at the opening session of the National Foreign Trade Convention at Charleston, S. C., on Wednesday, April 28. President Farrell of the Steel Corporation has been chairman of the National Foreign Trade Council for twelve years, or ever since the council was organized at Washington in 1914. He has been the leading figure in all the thirteen conventions. These have been held at widely scattered points—two on the Pacific Coast, two at New Orleans, four on the Atlantic seaboard and five at interior points. An address by Mr. Farrell has been a feature of every convention program. He has dealt with many factors of the export problem—the relation of our industrial capacity to foreign trade, foreign investment of American capital, cooperation in trade after the war, also various phases of the American Merchant Marine situation as they have developed in the years since the war. All these addresses have shown Mr. Farrell's unusual grasp of shipping and world trade questions in all their wide ramifications.

Manganese Ore Output Is Large

It Easily Can Exceed Consumption Now That Mining Is Resumed in Russia and Supplies Are Coming From New Sources

BY PAUL M. TYLER.

THERE is an old-fashioned rule that what goes up must come down. The essential truth of this homely saying has been widely lamented with respect to metal products, most of which came down more readily from their war-time levels than other commodities. While certain ferroalloys, and particularly ferromanganese, long resisted this tendency, cheaper ferromanganese is now an established fact, the recent spectacular drop from $115 to $90 or less placing it substantially in line with other iron and steel products.

The latter figure is cheap, not only relative to prices that have prevailed for the last year or two, but also relative to the cost of production. Imported manganese ore is still quoted at above 40c., which means about 65c. a unit delivered at the furnace, duty (22.4c.) and transportation paid. Since it commonly takes 110 units of manganese in ore to provide the 80 units of manganese contained in a ton of ferromanganese, the metallic mixture costs nominally 110 × $0.65, or $71.50. Adding to the cost of roughly 2½ tons of coke and considering that the expense of running a furnace is vastly greater for ferromanganese than for pig iron, no further calculation is needed to indicate that the making of ferromanganese for sale is not at present a profitable business in the United States.

MR. TYLER is known for his investigations for the Tariff Commission into the competitive line-up of the steel industry in various European countries. He takes the view in this article that the potential supply of manganese ore at present prices is in excess of probable demand. As Brazilian output falls, that from Russia promises to reach large proportions and the new mines of the West Coast of Africa have turned out nearly twice as much as Brazil.

Competition among domestic producers is one cause for the present situation. In pre-war time, when independent steel makers were supplied wholly from Europe, a price war between British and German producers brought the price of the alloy to less than $40 and even to $35 per ton, delivered at American ports. The United States Steel Corporation was making ferromanganese then for its own use and has continued to do so; but it has almost never supplied it regularly to other consumers.

New Domestic Competition

During the war, however, a number of new producers appeared, only to drop out one by one later when British supplies started to flow more freely again. The Lavino Furnace Co. was the only one of these merchant operations that survived, and for almost five years the domestic supply came mainly from this firm or from Great Britain. Later, however, the Electrometallurgical Sales Co. entered the field, and still later the Bethlehem Steel Co., which, like the United States Steel Corporation, had been making ferromanganese for its own use, began to offer it for sale. The struggles of these competing firms to get business from one another and from the English plants precipitated the drop in price.

A somewhat similar situation obtains abroad where new producers of ferromanganese, especially in Poland, are causing some anxiety to the older firms in England, Germany and Norway.

The price of $90 a ton, which was reached early in April, is equivalent to $56.40, without duty, or roughly 40 per cent higher than the price in the so-called "normal" period of 1913. It is in close harmony with the index of 137 calculated by the United States Bureau of Labor Statistics for all iron and steel products, but very much higher than the index of 113 for nonferrous commodities. In common with most metals, however, ferromanganese is now cheaper relative to its position in 1913 than other commodities, the average price of which in December, 1925, was 56 per cent above pre-war levels as measured by 1913 averages.

Manganese Ore Prices Still High

Manganese ore, on the other hand, even as measured in terms of other commodities, still costs more in the world's markets than it did in 1913. The present quotation of manganese ore at the Atlantic seaboard is 2¼ times pre-war, having increased from 17½c. to 40c. or more per unit, to which must now be added the duty of 22.4c. per unit under the Tariff Act of 1922, which applies to imports from all countries except Cuba.

Prices are fixed by supply and demand and, since world demand has varied relatively little and since supplies were interrupted by the war, prices have followed merely their natural course. Since roughly one-half of the pre-war supply came from Russia, the return to normal was retarded after the war by the unsatisfactory political situation in that country.

Less Call for High-Grade Ores

The demand for manganese ore is apparently less now than in 1913. Considerably more than 90 per cent of the consumption is in the steel industry and, since 1913, the world production of steel has thus far failed to exhibit a definite upward trend. The rapid growth in American output has largely been offset by declines in other countries, so that 1925 was the first post-war year in which the world total substantially exceeded that of 1913. Future growth in steel production is in part discounted by greater economies in the use of manganese.

From the angle of ore supplies diminished requirements result from the fact that high manganese pig iron (which in this country is made from manganiferous iron ores rather than from manganese ore) is displacing ferromanganese and spiegel more and more both in foundries and in steel works. Moreover, manganiferous iron ores are being substituted for manganese ores which were formerly used extensively in Europe for bringing up the manganese in pig iron. There is a large actual saving in manganese in making steel by the open-hearth as compared with the Bessemer process, especially the basic Bessemer. A much larger fraction of the world's steel now comes from the United States, where the open-hearth process is largely in vogue, and this process is now used more extensively abroad because of the greater employment of scrap and, in Germany, because of the desire to get away from dependence upon Lorraine ore.

Present Needs a Half Million Tons Below Pre-War Production

On the basis of a probable average steel output of 100 million tons annually for the next few years, and assuming 13 lb. of manganese (i. e., 16 lb. of ferro-

manganese) will be used per ton, the world's requirements of manganese for steel making are approximately 600,000 gross tons. After allowing for metallurgical losses (which may be reduced because of the greater use of the electric furnace), this represents 1,600,000 tons of 50 per cent ore. Chemical uses and the increased demand for dry batteries may increase the total yearly requirements to a maximum of 1,750,000 gross tons.

This figure compares with a pre-war production of 2,147,000 tons in 1913, of which Russia alone supplied 1,202,000 tons, the remainder coming principally from India and Brazil, with only scattering amounts from other countries. As a result of the war, manganese deposits in other parts of the world have been opened. There are persistent rumors that still other deposits, especially a large field in Australia, soon will be provided with transportation facilities that will enable them to be worked. Even without these probable additions, the potential supply of manganese ore at present prices exceeds probable demands.

Russian Output Soon May Exceed Pre-War

Wide publicity has been given the exclusive contract entered into on June 1, 1925, between the Union of Soviet Socialist Republics and the Harriman interests. The essence of this contract is that, in return for installing modern equipment for economically mining, washing and transporting the ore, the American company is conceded a monopoly of production of ore for export from the Chiaturi (Caucasus) district. The contract, which calls for a minimum exportation of 16 million tons in 20 years, virtually assures that exports shall soon equal the pre-war rate. The lessees are obligated to install, within five years, facilities for shipping 2,000,000 tons annually, or substantially more than the total probable consumption of the world.

The Soviet Government never was able to produce more than one-half the 1913 output, but the Chiaturi field under competent management is fast regaining its place as the dominant factor in the world situation. Almost from the beginning of operations last summer production exceeded the contract rate (only 300,000 tons) set for the first twelve months, and a million tons is expected for the current year.

Caucasus Reserves Put at 250 Million Tons

Apparently there is no physical obstacle to increasing production beyond any previous record. Reserves are ample for many decades, the most recent Russian estimate placing them at 250 million tons. The ores, which are rich in manganese and free from deleterious impurities, are well liked in all markets. That they can be mined easily appears from the fact that, even in 1923, under Soviet management, the output per employee was about 217 tons (13,000 poods) which, according to European mining standards, is good. In that year costs, especially overhead and concentrating expenses, were unusually high, amounting, if we may credit Russian official reports, to $7.12 per ton (22.29 gold kopecks per pood), or more than 35c. a unit. The cost of mining and washing doubtless will go down materially, but the present operators are obligated to pay royalties which are $3 a ton for metallurgical ore and $8 a ton for chemical ore (peroxide) for the first three years, after which they advance to $4 and $9 a ton, respectively. The $4 rate means a fixed charge of at least 8c. a unit and, in addition to this, the Soviet Government is to receive a share in profits when the price of ore exceeds a specified minimum.

While the Chiaturi mines are the most extensive and the best situated for export, averaging only 100 miles distant from the port of Poti, important manganese deposits are found in several other localities in Russia, notably in the Ural Mountains and in South Russia. Those in the latter region, which comprises the Nikopol district, are situated south of Krivoi Rog in the province of Kherson and extend into the provinces of Ekaterinoslav and Skalevatka.

In 1913 21 per cent of the Russian output was derived from three producing mines in this district. The ore is supplied in two export grades, one containing 50 per cent and the other 47 per cent of metallic manganese. Nominally there is a third grade, averaging 24 per cent, but it is practically unsalable, even locally. This area suffered badly during the Russian civil war, but the mines were eventually opened up again and exports were resumed in 1921. According to the development program of the Soviet, this territory is expected to produce ore at the pre-war rate of 248,000 tons annually by about 1927. It is reported that some 1600 persons are employed at the mines and production in the summer of 1925 attained an average of 30,000 tons a month, of which about one-half was exported.

Very little Nikopol ore has ever been shipped to the United States; it is normally exported to Germany, England and other European countries. While much better situated than the Chiaturi deposits for supplying the limited requirements of the Russian iron and steel industry, these deposits are almost twice as far from seaports, the average distance being, roughly, 200 miles.

While the Nikopol deposits are nominally still controlled by the Southern Ore Trust, this Soviet organization agreed early in 1925 to give the exclusive sale of the ore to a German concern which helps finance operations—at least to the extent of advancing 40 per cent of the value of ore produced. This arrangement should stimulate production.

It is commonly conceded that the deposits about Krivoi Rog cannot be mined as cheaply as those of the Caucasus. Nevertheless, official figures, as recently published in the *Russian Review*, show costs in 1923 to have been lower in the former region. The figures, which are translated into American units below, are of some interest, for they show the approximate distribution if not the actual total of costs of production in the two principal Russian localities:

Cost of Manganese Ore Production in Russia, 1923—Gross Tons

	Nikopol	Chiaturi
Wages	$1.66	$1.27
Materials	0.94	0.89
Fuel	0.14	....
Other expenses	1.01	1.71
Concentrating	2.00	3.25
Total	$5.75	$7.12

Russian exports promise shortly to equal, if not exceed, pre-war. While recently these have come partly from stocks, there is no cause to question the reported production of 531,000 gross tons for the fiscal year ended Oct. 1, 1925; this compares with the following official data:

Russian Production by Districts—Gross Tons

	1923–4 [1]	1922–3 [1]	1913
Chiaturi	320,000	148,400	954,000
Nikopol	105,000	64,400	248,000
Totals	425,000	212,800	1,202,000

[1] Fiscal years ended Sept. 30.

Better Transport Facilities in India

Next to Russia, India has always been the principal producer of manganese ore and, after conditions in the Caucasus became abnormal (and often before) the Indian output has been larger than that of any other country. Because of its marked ability to expand when required, India has been called the balance wheel of the industry. Mining began in 1892 and production reached a maximum of 900,000 tons in 1907. Even the British Imperial Institute reported in 1918 that the richer Indian ores were becoming less plentiful and authorities, not so competent, have declared that the output was definitely on the wane. Latest reports, however, promise the early completion of a standard gage railroad to replace the unsatisfactory transportation system which heretofore has been the only link between the large deposits of the central provinces and the sea. About a year ago the local government withdrew some of the restrictions that had hampered mining, although licensees must still turn over 25 per cent of their net profits as an extra tax in addition to fixed royalties.

Evidently, therefore, India is not yet out of the running. The ore, while it carries a trifle too much iron to be used alone in making 80 per cent ferromanganese, is lower in silica than that from the

Caucasus and often fetches a higher price than other ores of metallurgical grade. In Great Britain, for example, typical pre-war prices per gross ton unit, were 11 to 11½d. for Indian, 9 to 9½d. for Caucasian, and only 6½ to 7d. for Brazilian ores.

Brazil, despite its extensive deposits of good quality ore, is slipping from even third place among producers, largely because the mines, which are remote from ports of shipment, are badly served by internal transport facilities. Their development is further hindered by local taxes, which were again increased in 1925. During the war production expanded to 524,000 tons in 1917, and for a time Brazil furnished two-thirds of the growing consumption of the United States. But as other sources of supply became available the Brazilian output, which includes the ore mined in that country by the United States Steel Corporation, fell off to only 156,713 tons in 1924 and, if we may judge by American import statistics, to even less in 1925.

West Africa Leading New Producer

Of rapidly growing importance are the deposits of the Gold Coast in West Africa. Although scarcely known in 1913, this region now produces almost twice as much as Brazil and from the American viewpoint is quite as important, at least for the present. The ore is of high quality, as attested by its use in electric furnaces in Norway, and it seems to be moderately abundant. The mines are nearer the coast than either of the Russian deposits, and much closer to the United States. While the advantages of a shorter sea haul are partly offset by unfavorable conditions at the port, these conditions may be improved before long under the Takoradi harbor scheme. The following official export statistics for 1924, which have just been published, indicate where this new supply is being consumed:

Manganese Ore Exports from the Gold Coast in 1924

Destination	Gross Tons	Value (Pounds Sterling)
United Kingdom	44,782	150,578
Canada	6,568	10,510
Belgium	6,014	21,649
France	28,859	103,891
Norway	79,538	123,970
United States	67,641	115,802
Total	233,402	526,400

Domestic Production

By getting out almost 100,000 tons in 1925, the United States again entered the ranks of producing countries. About one-half of this output came from Montana, much of it being chemical ore for use in dry batteries, the demand for which has grown enormously because of the widespread use of the radio. The remainder was derived chiefly from small, scattered deposits where production was encouraged only because of the relatively high price of imported ore.

While the present domestic output is doubtless abnormally great, there will always be some production in the United States and in other localities such as Cuba, Central America and several parts of western Europe, where individual mines can operate successfully even though world prices come down to pre-war.

The aggregate of these scattered contributions will be substantially larger during the next few years than formerly. Moreover, several large deposits await only adequate transportation before being exploited economically. Manganiferous iron ore developments in various parts of the world also come into the picture. But even before these new factors appear above the horizon, cheaper ore is already in prospect.

TO STUDY FOUNDRY COSTS

Los Angeles Interests Combine for Thorough Survey and Analysis

LOS ANGELES, April 15.—Initiatory steps were taken on April 13 by the jobbing foundry owners of Los Angeles which, if plans tentatively adopted go through, will result in some of the most constructive educational work ever undertaken by the industry in the Far West. The project is to induce the 60 jobbing foundries in Los Angeles to submit their operating costs to scientific investigation, with a view to educating the owners in the proper technique of cost figuring. It is the plan to have John E. Hax, an experienced cost expert, conduct the investigation and instruct the owners individually on how to figure overhead and operating costs.

About 40 of the principal Los Angeles foundries were represented at the meeting. Of those present, about 30 indorsed the proposition and agreed to go on with it. Some of the others, while expressing approval, deferred final decision until after they should have taken the matter up with their organizations. Inasmuch as about 20 local plants were not represented at the meeting, committees from both the iron and the brass foundries were appointed to try to induce them to indorse the plan.

Mr. Hax recently concluded a similar campaign in San Francisco, with most beneficial and profitable results. The plan proposes a general fund, to be contributed to by the foundries, to defray costs.

Automobile Production High

March production of automobiles was the highest, with one exception, for any month in history, according to figures of the United States Department of Commerce. The total number of passenger cars made in the United States was 379,769, compared with a revised figure of 318,634 in February and with 319,140 in March, 1925. The only month which has exceeded the current figure was October, 1925, with 392,651.

In trucks, also, the March production was the highest with one exception. The total in the United States was 47,788 trucks, compared with 37,533 in February and with 43,009 in March, 1925. The only month exceeding the current one was September, 1925, with 57,894.

In both cars and trucks Canadian production of American models is additional, amounting to 18,273 cars in March and 3847 trucks. Total vehicles produced in the United States aggregated 427,557; in the United States and Canada combined, 549,677.

Production for the first quarter amounted to 970,414 cars in the United States, plus 114,980 trucks, a total of 1,085,394, or at the rate of more than 4,300,000 per year. The highest calendar year's production was that of 1925, with 4,153,357. Cars are being produced at a higher rate than the average month of last year, but trucks are not. In each case, however, the quarter showed a substantial gain over the first quarter of 1925.

Activity in Enameled Products Industry

Manufacturers of enameled products are extremely busy, according to a survey made by the Ferro Enamel Supply Co., 2100 Keith Building, Cleveland. This company reports that the present state of the enameling business equals the highest point of 1925. In November 1925, 86 per cent of the furnaces were being used and in March of this year 85 per cent were in operation.

Increased Employment in Metal Trades

Number of employees reported in the April Monthly Labor Barometer, issued by the National Metal Trades Association, Peoples Gas Building, Chicago, shows an increase over all recent months. The total was 656,731 for March, compared with 652,844 for February and with about 635,000 for two or three preceding months. All of these figures show a heavy increase over June, 1924, when the total was 513,517. Reports cover seven cities in New England, ten in the Empire group, seven in Ohio and Indiana, five in Michigan and four between Milwaukee and St. Louis.

Welding Not Yet Broadly Applicable in Structural Field

More Fundamental Data Needed, Says Engineer at Welding Meeting—Design of Joints Discussed at Other Sessions

THAT the odious comparisons between riveted and welded joints are not taken seriously by the structural designer and fabricator was indicated by James H. Edwards, assistant chief engineer of the American Bridge Co., New York, in a paper on "Welding in the Structural Field," which was presented at a meeting of the American Bureau of Welding, held in New York, April 23.

The American Bureau of Welding is the research department of the American Welding Society, and the meeting of the bureau was on the last day of the welding society's annual meeting held at the Engineering Societies Building, April 21, 22 and 23.

Welding information so far available for use by the structural designer and fabricator has been of the most optimistic character, as naturally it must, coming from advocates of the use of a new method or process, said Mr. Edwards. It has been mostly sales talk, he urged.

"While statements made concerning the welding art have been probably true in some part," he continued, "observations concerning the related operations have shown much ignorance, and have tended to discredit the whole. Statements to the effect that for welded joints all members of structure should be in compression, that welding increases the strength of the main material, and the odious comparisons of riveted and welded joints, are not taken seriously.

"Fabricators from years of experience have learned the virtues and weakness of rivets, and know how to use them so as to make economical and safe structures. What they are seeking concerning welding are the fundamental facts on which they may base their determinations of the strength. When human life is in jeopardy, one must be cautious. He must know the foundation on which he builds and be reasonably sure of the results obtained."

Fundamental information for which the structural trade is waiting, is, according to Mr. Edwards:

1. Can standard structural steel be welded satisfactorily and what are the limitations? If this grade of material is not suitable, what is?

2. What effect will the welding process have on the parent or main material?

3. Standard methods of making welds by different processes should be determined. Values on some unit basis for the strength of welds of different types should be fixed. Some reliable way of controlling the mechanical and personal element in the making of welds and in testing the completed work should be established.

Continuing, he said: "With this information fixed by scientific research and available to the industry, the manufacturers of welding equipment, the advocates of welding as a method of joining steel parts, and the fabricators of structural steel, all cooperating to solve an engineering and economic problem, will doubtless make great progress in the development of the art of welding in the structural steel industry."

Mr. Edwards's paper definitely reflected open-mindedness in the application of welding in the structural field. "Perhaps for the reason that we know so little about the welding technique, but know something about present-day structural practice, we may be able to indicate without prejudice the things that the structural engineer and fabricator want to be shown," said Mr. Edwards.

The fore part of his paper was devoted to giving the welding picture as the structural engineer sees it. Points of special interest were said to be: The structural steel material used; the welding operation; shop fabrication, such as handling and assembling; and cost.

Can Higher Strength Steels Be Welded?

It was pointed out that the steel used for structures is fixed by the steel makers, and at the present time is generally rolled to specifications adopted by the American Society for Testing Materials. The chemical contents are approximately: Carbon 0.15 to 0.40 per cent; manganese about 0.40 per cent; phosphorus not over 0.06 per cent; and sulphur not over 0.05 per cent.

"Using this standard material, which structural engineers believe should be adhered to, can good welds be made?" asked Mr. Edwards. "Furthermore, there is a tendency to give consideration in the case of special structures, to steel of higher strength, say average around 70,000 lb. tension, having a greater carbon content than standard structural, also steel of even higher tensile strength in the case of alloys. The structural engineer is naturally interested in knowing if these higher steels can be welded. If as some now think only steel of low carbon content and corresponding low ultimate strength, below 60,000 lb., can be safely welded, then much of the apparent saving by welding disappears when steel 65,000 to 70,000 can be fabricated in the usual way at no increase in cost over the lower grade.

"The efficiency of welded joints made in material of varying thickness, as well as the varying strength of joints, should be determined. There is doubt in the structural engineer's mind as to what effect the welding operation may have on the parent material. This should be settled by comparative tests of plain and welded material."

Human Element a Difficult Problem

"The type of apparatus or the method of making the weld is not of particular interest to structural steel fabricators," said Mr. Edwards, "as long as the results obtained are satisfactory. The limits of welding operations and strength of welds should be determined and standardized. The types of joints, such as lap and butt, should be studied and safe working values of the welds per unit under different conditions should be fixed for both static and dynamic loading.

"If the welding is done by machine, mechanical con-

trol may possibly be made positive and uniform. But there exists in the minds of manufacturers much doubt about ability to obtain uniform results when the human element is such an important factor in fusion practice. The training and control of the individual welder, the one person on whom the integrity of the connection depends, is the element concerning which all doubt must be eliminated. As this is mental or psychological rather than a physical or mechanical problem, its solution in a convincing way will be most difficult.

Field Operations Present Difficulties

"The shop operations, the so-called fabrication work, can best be determined by the manufacturers of structural products, rather than by makers of welding apparatus. The study and adoption of welding in making field connections of steel structures present a number of difficulties not met with in shop operations. Some of the outstanding difficulties are the ever-present element of tolerances and clearances, the taking care of line, level and plumb, and the erection of large tonnage in very quick time.

"The great drawback as we see it so far has been the lack of fundamental scientific data on which the manufacturers could base their strength determinations. When these are given them, they will willingly undertake to adapt their operations to new circumstances.

"The most important factor, after having satisfied the designer that welding can be safely done if certain well determined rules are applied and suitable methods adopted, is the cost. The study of production costs can best be done by the manufacturer of the finished product."

In the general discussion the truth of Mr. Edwards' statements seemed to be generally recognized and satisfaction was expressed in the suggestions that in carrying out a research program the welding experts would have the help of structural engineers and fabricators. A research into the welding of steel structures has been planned by the bureau in cooperation with the American Institute of Steel Construction.

Research Possibilities Discussed

The paper just reviewed was presented in a session devoted to discussion of the possibilities of pure scientific and practical research in welding. It was presided over by Dr. C. A. Adams, professor of engineering and consulting engineer, Harvard Engineering School, Cambridge, Mass.

Research progress in electric arc welding and possibilities of extending research in that field were outlined in a paper by H. M. Hobart, consulting engineer, General Electric Co., Schenectady, and W. Sparagen, secretary American Bureau of Welding. It was pointed out that in the last ten years great progress has been made in arc welding but that there are more problems formulated for answer now than then. Study of the way in which the metal is transferred from the welding wire across the arc to the work was said to be of primary importance. It was suggested that the bureau of weldin offer prizes for the solution of this as well as other research questions. The necessity of employing standard tests for determining the quality of welds was also stressed.

Discussion following centered in part around the possibility of giving a prize or scholarship to scientific men to take up some of these problems. In the opinion of some, more fundamental knowledge of the physics of the arc was needed more than anything else for the advancement of the electric welding industry, and it was held that much depends on research in pure science in relation to the arc. Research into the welding of stainless steel, which cannot be welded satisfactorily at present, was also urged in the general discussion.

In a paper on "Unsolved Fundamental Gas Welding Problems" S. W. Miller, consulting engineer Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., suggested study of the question: "Is there a true neutral welding flame, and if not, what is the nearest approach to it?" Study of the strength of welds at high temperatures was suggested and also research into non-destructive tests for welds. Another problem was the development of high-strength welding rods. Procedure control was characterized as a real research problem, and investigation of the best base metals for welding was suggested. Chairman Adams said that in gas as well as in arc welding there is room for the study of the physics of the flame.

Suggestions relating to investigations in the field of welded tanks were given in a brief paper by H. L. Whittemore, Bureau of Standards, Washington. Progress is being made by the welding society in the planning of a comprehensive scientific investigation in the field of pressure vessels in collaboration with the American Society of Mechanical Engineers and other organizations. Tests will be made to obtain fundamental information which will be of value to designers of pressure vessels and which will aid the A. S. M. E. boiler code committee and legislative bodies in framing proper codes and regulations for the construction and use of such vessels.

Symposium on Design of Welded Joints

PAPERS presented at the technical sessions, held April 22, of the American Welding Society, were planned to form a symposium on the subject of design of welded joints in several industries. Data presented included stresses, accessibility and position, technique, type of joints, materials, thermal considerations and tests. Most of the papers were preprinted in the April issue of the "Journal of the American Welding Society." Brief abstracts of the papers are given below.

Structures Designed for Welding

Emphasis was placed on the necessity of designing for welding, rather than using riveted design and substituting welding for riveting, in a paper on the "Design of Oxwelded Equipment," by E. E. Thum, engineer, Linde Air Products Co., New York. An engineer would not be satisfied to take a design for a riveted truss and merely note on the drawing: "Substitute welding for riveting" and expect to get satisfaction, said Mr. Thum.

Some advantages of welding in connection with the construction of a lime kiln 125 ft. long and 8 ft. in diameter were outlined. Three of these kilns, two of which were riveted and one oxy-acetylene welded, were placed in operation late in 1923. Riveted kilns of this size have usually been made of ⅝-in. plate, with butt strap joints: double riveted on longitudinal seam and triple riveted on circumferential seams. The metal in such a design, it was said, is not working to anywhere near its capacity. Results of tests, made after two years' operation of the kilns, to determine the reason for the excess of metal required for the shell were given. This investigation was claimed to show that the riveted kiln must be made of the heavy plate, and also that there is no reason why a welded shell should be as thick as a riveted shell. It was indicated that a ½-in. plate might have been used for a welded kiln of this size, which, together with other advantages, would bring the cost materially below the riveted construction.

Savings in drafting room expense—in the time of draftsmen, tracers and checkers—by the use of welded design, were also discussed, the design of a skew hopper for a dust-collecting system being used to show the advantages in this particular of welded design.

Principles which should control the design of oxy-acetylene welded joints were included in the paper. A table showing the ultimate tensile strength, with welding rods of various material, was given, and also figures for the strength of reinforced welds, based on

the thickness of the plate rather than the actual thickness of the weld.

Possibilities of Welding in Piping Design

Engineering principles involved in welded piping design, and the possibilities of welding in piping when used under proper conditions were dealt with in a paper by L. J. Sforzini, engineering and maintenance department, Eastman Kodak Co., Kodak Park, Rochester, N. Y. The title of the paper was "Welding in the Design of Industrial and Power Piping."

High-pressure steam, low-pressure steam, refrigerating fluid, air, water and general fluid piping were discussed in the order given, the discussion being prefaced by an outline of the advantages and disadvantages of the four principal types of non-welded joints used in pipe work. Mr. Sforzini said that he was not of the opinion that everything in a piping system should be welded to the exclusion of all other methods; but that every piping system should be studied by itself to determine whether welding can be used to advantage.

In conclusion it was said that "the welded pipe joint is a satisfactory joint, easy to make, comparatively cheap for large size pipe or for high pressure pipe, is a time saver, gives the designer freedom in piping layouts, and once made tight, stays tight. It saves in insulation cost. Its use makes possible certain economies in the industrial power plant pertaining to steam distribution, in permitting concentraton of power and heat production. Low pressure steam distribution can be made in cheap steel mains of large size, which can be added to at low cost." It was further stated that welded piping installed under proper supervision is fully as reliable as piping with any of the other ordinary joints. Welding was stressed as an important tool for the piping designer, who should understand both its possibilities and limitations.

Method of Making Pressure Tank Outlined

Steps in the design and manufacture of an electrically welded tank for use as an air or steam receiver under 250-lb. working pressure were outlined by L. H. Burkhart, chief engineer, Struthers-Wells Co., Warren, Pa., in a paper on the "Design and Manufacture of a Horizontal Cylindrical Pressure Tank."

The proposed tank was 48 in. in diameter, 15 ft. long on the cylindrical shell, and had the heads dished outwardly. A manhole and the required openings, fitted with nozzles or screwed flanges, were part of the structure. The tank is to be made by fusion welding (metallic arc) throughout, and is to be according to the unfired pressure vessel code, using a unit stress of 8000 lb. for double V-welded joints. The method of determining the thickness of the shell and heads, selecting the most economical size of plate and the method of preparing the shell and heads for welding were outlined. The method of welding was described in detail, the assembly of parts and make-up of the welds being shown by means of line drawings.

Welding of Bilge Barrels an Exacting Operation

The use of welding in the manufacture of bilge barrels was described in a paper on "Design of Welded Tanks for Tanks and Containers," by A. C. Vick, plant engineer, Detroit Range Boiler & Steel Barrel Company, Detroit. Because of Mr. Vick's absence presentation of the paper was by title. The Detroit company has employed welding in various forms for many years. Difficulties were met with in applying welding to the manufacture of the bilge barrels, these difficulties being fianlly overcome as outlined in the paper.

The "bilge" barrel gets its name from its shape. The shell of the barrel is made from sheet steel ranging in gage from No. 12 to 14. This sheet is carefully resquared on the two edges which butt together when the sheet is rolled and which forms the joint to be welded. After welding, the shell is placed on an expander, which forces it to take the exact shape of the mandrel. This operation is known as "bilging."

The stringent demand put upon the welding may be noted from consideration of the amount of bilging involved. In bilging a 55-gal. bilge barrel shell, the diameter is increased from 21 to 24½ in. at the bilge, the ends remaining 21 in. in diameter. The diameters at intermediate points are governed by the height of the segment at that particular point. The expansion of the 3½ in. at the bilge effects an elongation of 11 in., which is distributed over 66⅜ in., the circumference of the original cylinder. This is an elongation of 0.166 in. per inch of circumference. The elongation reduces thickness approximately 0.007 in., which in the case of a No. 13 gage shell, is a reduction in area of 7½ per cent.

Various changes in the methods of welding these barrels, devising of jigs, etc., since beginning the welding of this production in 1914, are outlined in the paper. With steel of proper analyses and annealing the percentage of "breakers" was said to be small. Welds made on 13-gage stock were cut in 1½-in. wide strips at right angles to the weld and were tested in a testing machine. The strips broke at 1800 lb. at a point ½ in. from the weld, this being stressed as indicating that with good steel the welds could be made stronger than the original material. An important requirement of these barrels is that they be airtight and the tests made to determine air tightness were briefly outlined.

Welded Joints in Ship Construction

Practically every form of welding can be used advantageously in the repair and construction of ships, according to J. W. Owens, director of welding, Newport News Shipbuilding & Dry Dock Co., in his paper on the "Design of Welded Joints in Ship Construction."

As automatic arc welding machines permit of welding the butt joint at a high rate of speed, and thereby minimize thermal stresses, it might be possible in the future, said Mr. Owens, to use this joint, unstrapped, provided the carbon content of the plate be kept low, preferably below 0.15 per cent, and the joint properly reinforced with weld metal. Another basic consideration might be the deposition of weld metal of a higher tensile strength than that of the base metal, or weld metal, which has as high ductility as can be secured with the hydrogen arc.

Thermit welding is, in Mr. Owens' opinion, preferable to smith welding for the construction of new stern frames and the frames of large rudders. The application of gas welding in shipyards to the construction of tanks, pipe fittings, welding of pipe lengths without the use of flanges and in the making of metal furniture, is considered good practice. Metal arc welding can also be used for this work. The butt joint is preferred for gas welding. Gas welding is used almost exclusively for the welding of non-ferrous metals and cast iron when readily preheated.

In discussing technique, Mr. Owens said that metal arc welds should in general be made in one layer, although the use of multiple layers is frequently necessary. In testing piping systems, tanks and watertight bulkheads existing tests for riveted joints, with or without the hammer blow test, are desirable. As the testing of each joint of the ship's structure is impracticable, reliance will have to be placed on properly designed joints, competent supervision, certification of all welders and the use of carefully selected filler material. Mr. Owens' company is taking steps to certify all of its welders and to issue standard practice sheets covering design and technique.

The relative merits of various formulas in use for determining the internal pressures in a cylindrical shell of closed end vessels were discussed by S. W. Miller, consulting engineer, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., in a brief address on the "Design of Welded Joints."

In a paper on "Arc Welding in Hydrogen and Other Gases," P. Alexander, Thomson Research Laboratory, General Electric Co., Lynn, Mass., described the new method of arc welding in a hydrogenated atmosphere. An outline of the methods described by Mr. Alexander was published in THE IRON AGE of April 8, page 989.

A report of the election of officers, plant visitations and other activities will be found elsewhere in this issue.

Electrochemists Discuss Fuels

Electric and Fuel-Fired Furnaces Compared—A Symposium on Chlorine — Modern Practice in Detinning—Cost Estimates and Conservation

THE programs of the American Electrochemical Society have recently been characterized by two important features: A symposium on some technical problem and a round table luncheon discussion on some topic of the practical sort. The annual or spring meeting, this year at Chicago, April 22, 23 and 24, was like its predecessors. Two unusually successful round table discussions and one symposium of decided merit constituted most of the program of the meeting last week at the Chicago Beach Hotel.

The two round table luncheon discussions were held simultaneously. One was devoted to the "Selection of Proper Plating Metals" and the other to "Comparative Merits of Electric and Fuel-Fired Furnaces." These discussions were conducted under the direction of the electrodeposition and electrothermic divisions of the society. The symposium was devoted entirely to the subject of "Chlorine" in all of its ramifications and constituted the entire program for the first day's technical sessions.

The meetings were all held at the hotel except the one on Saturday morning, which took place at the Kent chemical laboratory of Chicago University.

Electric Versus Fuel-Fired Furnaces

OVER 150 members and guests sat down at the luncheon devoted to the discussion of the "Comparative Merits of Electric and Fuel-Fired Furnaces." Under the chairmanship of W. J. Priestley, Electro Metallurgical Sales Corporation, New York, the affair was thoroughly organized and was one of the most successful which this society has conducted. Representatives of both users and sellers of electric furnaces of various types for electric steel melting, for brass, and other non-ferrous uses and for heat treatment participated, as well as men from gas companies and central power stations.

Among those who were present may be mentioned the following:

Samuel Arnold III., American Bridge Co., New York.; H. E. Bromer, Pittsburgh Electric Furnace Corporation, Pittsburgh; F. W. Brooke, Swindell Brothers, Pittsburgh; E. L. Crosby, Detroit Electric Furnace Co., Detroit; F. L. Wolf, Ohio Brass Co., Mansfield, Ohio; C. E. Sims, United States Bureau of Mines Experimental Station, Seattle; J. A. Seede, General Electric Co., Schenectady, N. Y.; Wirt S. Scott and C. G. Schleuderberg, Westinghouse Electric & Mfg. Co., Pittsburgh; T. F. Baily, Baily Furnace Co., Alliance, Ohio; Dr. B. D. Saklatwalla and N. Petinot, Vanadium Corporation of America, New York; R. L. Baldwin and E. F. Clarke, Republic Carbon Co., Niagara Falls, N. Y.; L. C. Judson, Acheson Graphite Co., Niagara Falls, N. Y.; H. E. Scarbrough and W. R. Stansel, General Electric Co., Schenectady, N. Y.; Messrs. Chapman and Guthrie, of the Peoples Gas Light & Coke Co., Chicago, and a representative of the Surface Combustion Co., New York.

It is a rule of the society that round table discussions of this nature are understood to be entirely informal and not to be reported in detail. No stenographic report is taken or published in the records of the society. The first meeting of this nature was organized and conducted by the American Electrochemical Society at its Dayton meeting in 1924 and unlimited discussion and freedom from published reports are the main features which have made these meetings so successful.

It is therefore possible in the following to give only generalities concerning some of the chief points brought out. There were, however, much data concerning costs and intimate experiences in the various fields touched upon which were highly informative to those present. Not only steel melting but brass foundry experience, electric gray iron melting and heat treatment came in for generous discussion under the well organized direction of the chairman. The discussions were so interesting that they lasted until nearly 5 p. m., when it was necessary on request to give up the room for other uses.

Steel Melting

One of the important topics brought up under steel melting was the use of high voltages for quick melting and lower voltages for refining. There were advocates for and against this procedure but the fact that, in some very large furnaces and also in many smaller ones, this practice is growing in favor, was prominently brought out by various speakers. In some ingot practice it was developed that the melting of large heats had been materially cut down, resulting in some cases in a 20 per cent increase in output. The experience of one or two companies in using this method of applying electricity on small furnaces was recounted, generally advantageous results being reported. The question of multiple voltages as distinguished from the ordinary, two-voltage system was also quite liberally discussed with a preponderance of opinion in favor of the multiple system.

As to the relative merits of the open-hearth as representing the fuel-fired furnace and the electric, some

W. J. PRIESTLEY organized the roundtable luncheon on electric and fuel-fired furnaces. He has had a wide experience in both open-hearth and electric furnace practice.

COLIN G. FINK

WILLIAM BLUM

F. M. BECKET

Dr. William Blum, the new president, is assistant to the chief of the chemical division of the United States Bureau of Standards. His work in electrodeposition has placed him in an authoritative position in this field. He has been active in the society for many years. Doctor Becket is the retiring president. Doctor Fink was re-elected secretary

speakers expressed the opinion that a comparison is hardly possible because the two are so entirely different and because the raw materials also differ. An advantage in favor of the open-hearth as compared with the electric arc furnace was the more uniform temperature possible from the former. It was pointed out that in the electric arc furnace the temperature is concentrated near the arc, resulting in a less uniform temperature throughout the bath. The same speaker, in discussing different voltages, stated that enough study had not been made concerning the effect of high voltages on the steel, either as ingots or in rolling.

There were numerous advocates of the open-hearth furnace who claimed that just as good steel could be made by that medium as in the electric. One speaker contended also that steel had been made with high voltages for the government for gun forgings and it was not inferior to steel made by other methods. The effect of the arc on the final product and the question of gas absorption by either method of melting was pointed to as worthy of careful consideration in any comparison of the two methods.

Non-Ferrous Melting

Not much time was devoted to the question of the merits of the relative fuels in non-ferrous melting, but the experience of one user or one company which has various types of electric furnaces, as well as oil and gas, was interesting. In comparing the induction and arc electric furnaces this representative stated that he had not come to a decision as to which was the better, but that all methods were being given a thorough trial. One interesting bit of testimony was to the effect that it had been found that a difference of about 100 degrees in temperature had resulted in an increase of at least 10,000 lb. per sq. in. in the tensile strength of the final product.

Electric Gray Iron

Some of the rapid strides which have been made in the melting of gray iron electrically were brought out by several speakers. The fact that over 20 electric furnaces are in use in this country in producing gray iron was testified to by one speaker and the uniformly superior product which was possible in many cases from this method of treatment was also pointed out. It had been the experience of several users of electric furnaces in the melting of gray iron that the product was not only more uniform than that melted in the cupola, but the fracture of iron of the same chemical composition was considerably different. The large operations in this particular field which are about to be undertaken by a large motor company in duplexing its blast furnace metal was also favorably commented upon. The question of the control of silicon in electrically melted gray iron was discussed by several but, while it had been the experience of one or two that this was difficult, the general consensus of opinion was that it was possible under proper conditions to easily control the silicon content of the iron.

Some of the experiences of the government in making synthetic gray iron and in making various products, such as steel, gray iron and other materials in the same furnace were related by a representative of the Bureau of Mines.

Fuels for Heat Treatment

The most interesting part of the meeting took place when the question of the merits of the two fuels for heat treatment was introduced. A representative of a large electric company introduced the subject and, among other things, cited the experience of many users of electricity in heat treatment, pointing out particularly that where formerly, in the use of fuel furnaces, rejects had amounted to nearly 25 per cent of the product, the substitution of the electric melting had resulted in practically no rejections. The experience of still another company was cited, to the effect that, where rejections were from 10 to 25 per cent in the use of fuel furnaces, they now amounted to nothing where electric melting had been substituted. The cost of power was pointed out as not a factor because other advantages overbalanced this extra cost. It was contended that progress in electric melting in recent years has been analogous to the progress in the motor industry and that in electric heating alone over 1,500,000 kw. are now in use, equivalent to one-tenth of the load of the country.

A representative of another company outlined the extent to which electric furnaces have been introduced in that company's own plants and recited some of the difficulties which had to be overcome. In that company there are now in use from 110 to 125 electric furnaces for various purposes, including enameling.

The representatives of the gas companies were by no means silent. They pointed out that the gas indus-

H. C. COOPER

Doctor Cooper is chairman of the new local section of the society at Chicago. He was in charge of the committee which made arrangements for the complete success of the convention

D. A. PRITCHARD

Doctor Pritchard organized the symposium on chlorine

Mr. Mantell was the author of the paper on detinning of tin plate scrap

C. L. MANTELL

try as a whole is not so carefully organized as the electric industry and that progress in the use of electric furnaces is due as much to engineering skill as to the electricity itself. If various cities were compared, it would be found, they contended, that conditions were entirely different in Chicago than in Detroit. In the particular field of heat treatment these representatives contended that the greater use of electricity was due to the inactivity of the gas industry, which is by no means dead. Much of the modern gas equipment is particularly successful in heat treatment in certain localities and it was emphasized that in many cases as good results could be and were being secured with gas as with electricity.

A Symposium on Chlorine

IMPORTANT contributions to the literature of the chlorine industry made up the symposium of 15 papers which occupied the deliberations of the morning and afternoon technical sessions on the first day. The symposium was organized under the chairmanship of D. A. Pritchard, works manager Canadian Salt Co., Ltd., Windsor, Ont. Nearly every phase of the industry was represented by the authors.

Detinning Tin Plate Scrap

C. L. Mantell, consulting and chemical engineer Pratt Institute, Brooklyn, presented the latest developments in the recovery of tin from tin plate scrap in his paper entitled "Utilization of Chlorine in the Recovery of Tin and Tin Salts from Tin Plate Scrap." Chlorine detinning of tin plate scrap with the production of tin or tin salts is becoming rapidly of greater importance, said the author. This is caused by the great increase in the production of tin plate and tin plate containers, the increase in tin prices and the relative tin metal shortage. Production of tin plate in Britain before the war was about 700,000 tons annually. The United States bought about 70 per cent of the Welsh tin plate output up to about 1890 but there is now produced in the United States approximately 1,300,000 tons per year. Mr. Mantell's paper is a brief economic discussion of the chlorine process and its commercial adoption.

Many of the chemical and electrochemical processes originally tried were failures as were most of the mechanical processes. Three processes, however, have operated successfully in recent years and have been more or less in competition with one another for the last 40 years, during which time one or another of these has ultimately gained predominance, due to refinements in that process over the others. These three processes are the electrolytic alkali process, the alkali chemical process and the chlorine process.

The most important modifications of the chlorine process are those of Goldschmidt, Sperry, Acker and Von Schutz. In the Goldschmidt process, chlorine is introduced in the detinning chamber under pressure, which causes the reaction gas to penetrate all parts of the scrap material. In the Von Schutz process a dry mixture of chlorine diluted with other gases, such as dry air, is drawn through the scrap by suction. This process has the advantage of having the shorter detinning time, simple apparatus and little manual handling. In the Acker process liquid chlorine, which continually sets free chlorine gas, is used as the detinning agent. Sperry, on the other hand, uses mixtures of stannic chloride and chlorine in the presence of stannic chloride, usually in a closed system.

In general, the chlorine process, says Mr. Mantell, has advantages over the electrolytic method as it can be carried on in larger units and the labor charges are therefore materially reduced. The detinning is also somewhat more thorough and less tin is lost.

Plants for the recovery of tin from tin plate scrap are fairly simple. The cost will vary considerably with the size of the plant, from $15 to $20 per ton of scrap handled for a yearly capacity of 1500 tons to as low as $8 to $10 per ton of scrap handled in a plant taking care of 10,000 tons per year. Tin plate scrap has no market as such, but on the other hand, detinned scrap has a ready sale. Stannic chloride crystals are in constant demand and salable at an attractive price. If the manufacturer desires, tin metal can be recovered from the chloride with a good margin of profit. There will be consumed approximately 80 to 100 lb. of chlorine per ton of tin plate of equality and weight of tin coating on tin plate commercially used for cans. The amount of scrap resulting from the fabrication of tin containers alone is tremendous. With increasing prices of tin, the recovery of tin becomes of greater and more pressing importance. Chlorine detinning, says Mr. Mantell, in the United States outbids all competing processes to aid in the utilization of the huge amounts of tin plate scrap which would otherwise be a total loss and a great economic waste.

Steel Cars for Chlorine

In a paper entitled "Transportation of Liquified Chlorine Gas," by H. P. Wells, H. M. Mabey and J. M. Roland, chief engineer Hooker Electrochemical Co., Niagara Falls, N. Y., which was presented by Mr. Roland, the various types of cylinders and tank cars of steel were interestingly described. Discussing the investment in tank car equipment alone, the authors state that if it is assumed that the average cost of the 317 Class V tank cars is $4,500 per car, "we have an investment of $1,426,500 in the single unit cars and approximately $1,000,000 in the 100 multiple unit cars with their extra containers, making a total investment of $2,426,500 in steel tank car equipment. This means an investment of the chlorine manufacturers of $48.49

per ton year of chlorine, there being no car for this service owned by the railroads at the present time. In addition to this equipment, the chlorine manufacturers have an investment of about $1,300,000 in steel cylinders, making a total investment of approximately $3,726,500 in liquid chlorine containers."

A paper by Henry Rawdon, physicist United States Bureau of Standards, Washington, on "Note on the Protection of Iron by Cadmium," summarized the results of some simple qualitative experiments in which specimens of steel and of iron in each of which a plug of another metal inserted was immersed in dilute sodium chloride solution. Zinc and cadmium behaved alike in preventing the corrosive attack of the iron.

"The Nature of a Protective Film of Iron," by Dr. T. Fujihara, graduate student Harvard University, Boston, discusses the fact that when a drop of water is placed on iron with a polished surface there will appear an uncorroded rim outside of the drop. The protective effect of this film would be pronounced, says the author, if carbon dioxide were excluded from air under which iron is corroding.

Annual Meeting, New Officers and Future Conventions

AT the annual business meeting which was held Friday morning, the following officers were elected:

President, one year: Dr. William Blum, United States Bureau of Standards, Washington.

Vice-Presidents, two years: Dr. Paul D. Merica, International Nickel Co., New York; Prof. Bradley Stoughton, Lehigh University, Bethlehem, Pa.; Prof. O. P. Watts, University of Wisconsin, Madison, Wis.

Managers, two years: William G. Harvey, American Magnesium Corporation, Niagara Falls, N. Y.; Dr. B. D. Saklatwalla, Vanadium Corporation of America, Bridgeville, Pa.; George B. Hogaboom, Hanson & Van Winkle, Newark, N. J.

Treasurer: Acheson Smith, vice-president, Acheson Graphite Co., Niagara Falls, N. Y.

Secretary: Dr. Colin G. Fink, Columbia University, N. Y.

The secretary and treasurer were both reelected, each having served the society a number of years in these offices.

Secretary's and Treasurer's Reports

The report of the treasurer for the year, which in his absence was presented by the secretary, showed a balance on hand Jan. 1, 1926, of $9,972.68 as compared with $3,225.10 Jan. 1, 1925. The total income for the year was $21,216.77, with total disbursements of $16,468.91, leaving a net income of $4,747.86, which with a sale of bonds amounting to nearly $2,000 brings the balance to the figures mentioned above.

The secretary in his report, which was given only very briefly, called attention to the establishment of a new section in Chicago with Dr. H. C. Cooper, director of research Bauer & Black, Chicago, as chairman and S. C. Langdon, assistant professor of chemistry, Northwestern University, Evanston, Ill., as secretary.

During the year the society adopted an emblem which is used on its stationery and which is also available as a pin or a button. As the society's representative at the National Research Council, Dr. H. C. Parmelee, editor *Chemical and Metallurgical Engineering*, New York, was appointed earlier in the year.

The report of the publication committee, F. A. J. FitzGerald, FitzGerald Laboratories, Niagara Falls, N. Y., chairman, showed that during the year 61 papers had been examined, of which 46 were accepted, of which one was a lecture, 7 rejected, 4 withdrawn and 4 returned to the authors for revision.

The report of the patent committee under the chairmanship of E. J. Prindle, of Prindle, Wright, Neal & Beam, 111 Broadway, New York, included a resolution advocating higher salaries for Federal judges which was adopted by the society.

New Honorary Member

An addition to the list of honorary members of the society was announced as having been made by the board of directors, at its meeting the evening before, in the person of Dr. Edward Weston, upon the recommendation of 11 members. Owing to the illness of Doctor Weston and the forced absence of Dr. Carl Hering of Philadelphia, the formal presentation of honorary membership was postponed until the fall meeting of the society in Washington. A letter from Doctor Hering was read, expressing regret at not being able to be present and stating that out of the 49 meetings of the society, of which he had been a director since the foundation, this was the fifth meeting he failed to attend. The secretary was authorized to send Doctor Hering a telegram expressing its regret at his inability to be present.

Future Conventions

Announcement was made that the fall meeting of the society will be held at the Hotel Washington, Washington, Oct. 7, 8 and 9. For the symposium the subject of "Materials for Extreme Conditions in the Electrochemical Industry" has been selected. The annual meeting for 1927 is to be held in Philadelphia and will be the occasion of the twenty-fifth anniversary of the foundation of the society in that city. Frank Hodson has been selected as chairman of the local committee. For the fall of 1927 a trip into the Far West, as far as Washington and Oregon, has been suggested and the membership will soon be canvassed as to the feasibility of such an undertaking.

The President's Address

At the close of the annual meeting, Dr. F. M. Becket, vice-president Union Carbide & Carbon Co., New York, delivered the customary presidential address. Taking as his subject, "An Opportunity for Conservation," he discussed a new phase of this important matter. So well was this received that suggestions were made that it be printed for general distribution. An abstract which was crowded out of this issue will be published later. The theme was the needless oversight of cost accounting in commercial technical research which frequently renders such work almost worthless. Earlier attention to this would often prevent useless expenditure of millions of dollars. Constructive suggestions were offered.

Heavy Shipments of Track Work

Shipments of trackwork for tee-rail track of 60 lb. per yard and heavier for the first quarter of 1926 have been collected by the American Iron and Steel Institute. It will be noticed from the tabulation by months that the total for the quarter was 7508 net tons, or over 17 per cent greater than that of the first quarter of 1925.

The first quarter of 1925 was roughly about 25 per cent of the total for that year, 170,564 tons, and the total for the first quarter of the present year is nearly 25 per cent of the total for the calendar year 1923. The total for that year was 210,762. For the years 1923 and 1924 monthly and quarterly shipments were not ascertained, but the point is that the shipments so far this year appear to be on a par with those of 1923.

The material covered includes all special or fabricated tee-rail trackwork, which means switches, switch stands, frogs, crossings, guard rails and appurtenances, and comprises manganese steel and other metals as well as carbon steel, and includes export as well as domestic shipments.

SHIPMENTS OF TRACK WORK

	1925	1926
January	11,066	15,197
February	14,362	16,078
March	17,925	19,586
First quarter	43,353	50,861

Effect of High-Speed Steel on Machines

Re-Design of Most Members for Rigidity Followed by Re-Design of Gearing for Service—Recent Simplification of Steel Schedules

MORE than 50 men attending the regular monthly meeting of the New York Chapter of the American Society for Steel Treating, in the Merchants Association rooms, Woolworth Building, on the evening of April 21, listened to addresses by W. P. Kirk, general sales manager, and A. H. d'Arcambal, chief metallurgist Pratt & Whitney Co., Hartford. Mr. Kirk centered his remarks about a number of illustrations thrown on a screen, showing machine tools of different dates and illustrating vividly the compactness of design of the present high-duty equipment compared with its predecessors of ten or twenty or more years ago. Mr. d'Arcambal followed this by telling something of the characteristics of the steels used and the reasons for their selection. The two papers together formed the story of the gradual transformation of the machine tool as demands for heavier and heavier cuts followed the increasing use of high-speed cutting tools.

Preceding the addresses the report of the nominating committee was read, including the nomination for next year of Ancel St. John as chairman.

Development of Machine Tools

Much of the change in machine tools has been in the driving mechanism. Gears of the materials in vogue 20 years ago would be so cumbersome and take up so much room as to be untenable under present conditions. Besides this, breakage of the old-time gears was rapid, whereas today gears made of heat-treated alloy steels have been in use for long periods in hundreds of shops all over the country without any record of breakage whatsoever. It was a long uphill struggle to induce the "front office" to buy material costing 10c. a lb. for this purpose, where previously 4c. material had been used. The difference on a 40-ton carload made a tremendous impression and the obstacle was a serious one to overcome.

Introduction about 25 years ago of the first high-speed steel cutting tools forced a gradual and accelerating re-design of machine tools. This came from the increased speeds and feeds used, as well as from considerations of safety. Beds, columns, tables and other parts of the machines were made larger and more rigid so that they might satisfactorily withstand the greatly increased pressures brought about under the new order. The first re-design was followed by another one about 1910, in which the older cast iron gears, with a tensile strength of 25,000 to 30,000 lb. per sq. in., were replaced by plain carbon steel gears, untreated, with a carbon content of 0.20 to 0.50 per cent and a strength varying correspondingly from 50,000 to 80,000 lb. per sq. in.

About this time the automobile industry began to standardize not only its designs but its practice, to demand higher and higher quality in its materials of construction and to go heavily into the use of alloy steels and heat treatment of steel. At a single step this heat treatment, properly applied, raised the average tensile strengths from 60,000 lb. to fully 100,000 lb. per sq. in. Case hardening steels of 0.40 to 0.50 per cent carbon had had a considerable vogue. It was soon found, however, when subjecting these materials to heavy duty, that the core was too brittle and a great many breakages resulted.

Many machine tool builders, learning of the qualities of alloy steels, began to use them in a tentative way. For the most part, however, this use was of an untreated steel or, where heat-treatment was applied, it frequently was incorrectly apportioned to the particular steel used.

Through these various processes we have reached the present condition where machine tool gears are made of a chrome-vanadium steel known as S. A. E. 6150, heated to 1600 deg. Fahr., quenched in oil and drawn to 550 deg. This provides a Brinell hardness of 512 and leaves so hard a surface that the standard broken file test does not leave a scratch. Compared with 30,000 lb. strength of cast iron gears, with total lack of ductility, we now have a strength of 275,000 lb. per sq. in. combined with an elongation of 10 per cent and a reduction of area reaching 35 per cent. Compared with frequent replacements of the older gears, occurring sometimes as often as once a month, we have a record of no gears returned from any one of the hundreds of users during the past five years.

Fewer Varieties of Steel

Another development along this line has been a simplification in the steel schedules, particularly as to number of different types used for different parts of the machines. In the Pratt & Whitney practice, the 24 types of five years ago have been reduced to only nine classes of steel. Briefly, these are as follows:

S.A.E. 1020, case-hardening carbon steel, used for cranks, levers, etc.

S.A.E. 1112, Bessemer screw stock, used for screws, nuts, washers, collars, etc., because of its easy machining qualities.

P. & W. 1420 and P. & W. 1440, alloy steels made by the acid open-hearth process, both high in phosphorus and sulphur and with 1 per cent manganese. These have respectively 0.20 and 0.40 per cent carbon, and are used for untreated parts, lead screws, lock nuts, and a number of other units.

S.A.E. 6120, case-hardening steel, containing 1 per cent chromium; hard wearing and tough, used for clutches, spindles, high-speed gears and high-duty worms.

S.A.E. 6150, chrome-vanadium steel, used for clash gears, clashing clutches and many other parts subjected to shock.

S.A.E. 10,115, carbon tool steel, used for cutter spindles, bearings, and other places where hardness is desired.

S.A.E. 43, oil-hardening steel, used for gaging elements, etc.

High-speed steel, used for lathe centers.

Two special steels in particularly large use by the Cincinnati Milling Machine Co. were listed: S. A. E. 3145, for all parts requiring great strength. This steel contains 1½ per cent nickel, ¾ per cent chromium and 0.45 per cent carbon, and is an oil-hardening steel. Arbors, spindles, gear shafts, clutches, etc., are made from this material. Smaller units of the same general type are made of S. A. E. 3115, which has the same nickel and chromium characteristics as 3145, but only 0.15 per cent carbon. This is a case-hardening steel noted for its resistance to wear.

Other machine tool builders use other alloy steels, some running as high as 3½ per cent nickel. Each user has his own favorite materials. In most cases, where properly handled, little choice can be made from one to the other. All undoubtedly will do the work demanded of them.

Special Gage Blocks

When the Pratt & Whitney Works entered upon the manufacture of gage blocks considerable experimentation was done to determine the characteristics of the steel to be used and the treatment it was to receive. The first type, made of steel containing 1 per cent carbon and 1½ per cent chromium, was tested for accuracy to 1 millionth of an inch and this test checked by the United States Bureau of Standards. In spite of the high carbon content, however, these gage blocks, when passed into service, were found too soft for the purpose and a great many of them came back.

In the second group the carbon was raised to 1¼ per cent and the chromium reduced to the same percentage. This resulted in a sufficiently hard material to satisfy the most exacting requirements. The problem then came up of seasoning these blocks without

taking the long period of time previously used. As this is now done, the block is plunged into oil at 275 deg. Fahr., held about 10 min., then plunged into kerosene at 30 deg. below zero, held another 10 min., back into the oil again, then into the kerosene, and so on for about 60 of these alternations. The resulting material tests about 100 to 105 scleroscope, and not a single such block has been returned during the five years they have been produced and sent out into service.

It was found easy to make these blocks with parallel surfaces; easy to meet the dimensions within an exceedingly small fraction of an inch. The difficulty, however, was in getting a steel properly made and properly seasoned for the required stability. All of these blocks as sent out are certified as accurate to within 3 millionths of an inch. This result has been achieved in spite of the great reduction in price, which, at the beginning, carried the $1,000 or $1,200 of previous types down to $550. The present price is about $300 for a complete set of 81 gage blocks.

NEW LINE OF TURRET LATHES

Rigid Construction and Operating Conveniences Are Features—Ball Bearings Extensively Used

Increased productive capacity and convenience of operation are stressed in connection with a new line of heavy, ball-bearing turret lathes, being placed on the market by the Gisholt Machine Co., Madison, Wis.

Two sizes of the machine are now in production, the 3L having 21-in. swing and 4½-in. and 5-in. bar capacity, and the 4L having 28-in. swing and either 9-in., 10-in. or 12-in. bar capacity. In each size, two types are available, one with fixed-center turret and the other with cross-feeding turret, both types having the full-swing side carriage with square turret tool post. Either model is adapted for the general range of production work, and the cross feeding turret is especially useful for small lot production, railroad work, tool room and die work, as it permits the use of simple tooling and quick setups. Short, stiff tool holders with forged tools may be used for facing and boring. Features of the general design are, ball bearings on all shafts transmitting power, and ball thrust bearings for the main spindle and feed nuts; alloy-steel, heat-treated gears; multi-disk friction and brake; independent feeds to each carriage with unit assembly of feed mechanisms; rapid traverse for each carriage independent of the feeds; automatic-feed and traverse trips; micrometer dials with observation stops; double bevel turret clamp ring and index bolt operated by one lever; steel forged spindle with bronze bearing boxes tapered in housing for adjustment, and adjustable from outside; and hinged motor mounting.

The cast iron pan supporting the machine comprises a series of chambers formed by ribs running transversely and lengthwise. The chambers next to the edge of the pan are covered with perforated sheet steel, and as the cutting lubricant falls from the tools upon these sheets, it is strained and drained back through the chambers to the central reservoir without accumulating in the pan.

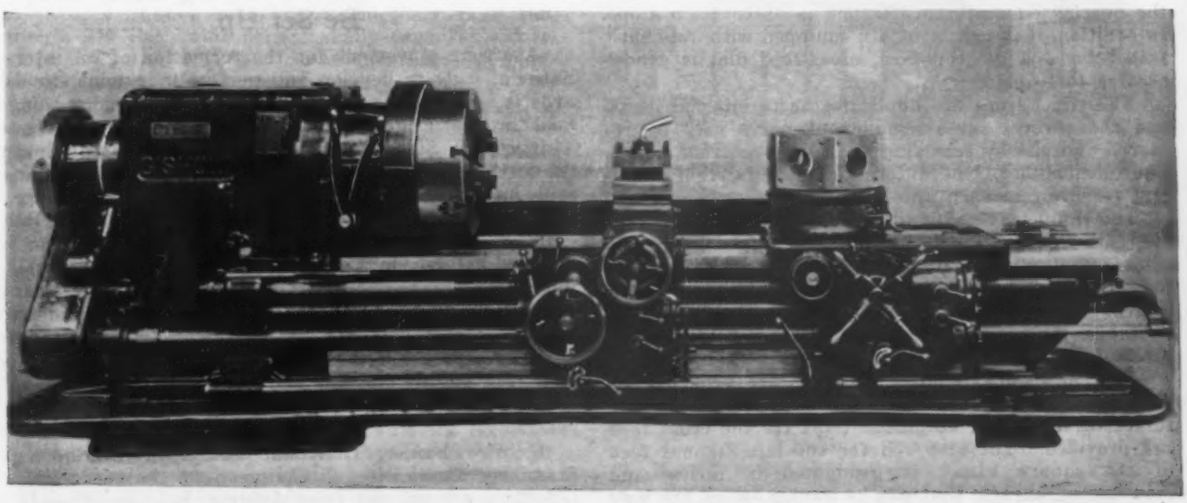
The bed of the machine is of heavy box section ribbed laterally every 12 in. with a center rib extending up under the headstock. The ways are wide and flat, both front and back, with an under-cut way low down on the front for supporting the apron of the side carriage. The walls of the headstock have been carried well up above the spindle bearings and a plate on top presents a flat surface to receive the motor base. The motor base is hinged so as to swing back and give access to the headstock, without removing the motor.

The 3L machine is driven by a 15-hp., 1200-r.p.m. motor which is belted to an 18-in. pulley provided with an outboard ball bearing and inclosed for safety. A 25-hp. motor is recommended for the 4L machine. On this machine the motor pulley, as well as the drive pulley, is supported by outboard ball bearings located in the surrounding housing. Sixty-three large ball bearings are used in each machine.

The arrangement of the headstock may be noted from the accompanying close-up illustration. The drive shaft and intermediate shaft are carried in annular ball bearings, and the spindle is held in bronze sleeve bearings tapered on the outside for adjustment. The collars for adjusting the tapered spindle bearings have gear teeth cut on their circumferences, and the wrench provided carries a gear segment on one end. This segment is cut about a hole as a center, into which a sliding pin, held in a boss on the front of the headstock, is inserted and acts as a fulcrum in adjusting the bearing for high speed work or heavy cuts. This adjustment is made from the front without raising the headstock cover. The spindle thrust is taken on a large ball bearing located just back of the chuck gear.

The multi-disk friction on the back shaft is double and is thrown to either side when starting, depending on the speed desired, and when it stands in neutral the multi-disk brake is engaged. Both clutch and brake are made up of alternate disks of soft steel and phosphor bronze. Eight speed changes ranging from 8 to 257 r.p.m. are available. Headstock mechanism operates in a bath of oil, and a special oil well supplies the front spindle bearings.

The chuck gear is keyed to the spindle flange, while the spindle itself has a threaded nose for receiving



The Machine Is Built in Two Sizes, the No. 4L Being Shown Above. The swing is 28 in. and the bar capacity either 9, 10 or 11 in. In each size two types are available, one with fixed-center turret and the other with cross-feeding turret

various types of chucks and fixtures, this nose having a taper back of the thread for centralizing the fixtures or chucks and allowing them to be attached with a metal to metal fit.

The feed train is carried from the spindle on a series of ball-bearing shafts down to the feed shaft. A separate lead screw is provided for each carriage, which revolves only when driven by the rapid traverse mechanism. When the carriage is feeding, the lead screw stands still and the feed shaft, through a ball-bearing gear train in the apron, rotates the nut about the lead screw. When the rapid traverse is engaged, the lead screw runs ahead of, or in the opposite direction to, the feed, which is still operative at the end of the traverse unless disengaged. Eight reversible feed changes are provided in each apron, and additional feeds may be secured by pick-off gears in the headstock end. Feeds from 1/256 in. to 1/2 in. per revolution, and all standard threads, are secured through one set of change gears, and special change gears may be provided when required. The hand wheels on both carriages are so geared to the lead screw nut through a differential gear that one revolution of the hand wheel moves the carriage 1 in. When thread chasing, the wheel is locked by a plunger pin which facilitates catching the thread at each pass. An observation dial for the longitudinal feed is located on each carriage, graduated and geared to show 7 in. of circumferential movement for each 1 in. of carriage travel, and several adjustable clips are provided on the beveled circumference to act as observation stops. In addition, both carriages are equipped with automatic feed trips and the tool-post, cross-feed dial is graduated in thousandths.

The two aprons are duplicates as to internal parts, and the several sub-assemblies of parts may be removed as units by removing end plates or front plates. The lubrication of the differential gear is from a central reservoir in each apron.

The rapid traverse is at the rate of 40 ft. per min. for each carriage independent of the feeds, and the pilot wheel on the turret carriage is automatically locked against rotating when the rapid traverse is engaged. The rapid traverse mechanism is mounted as a unit in the rear of the headstock, and is belt driven direct from the drive pulley.

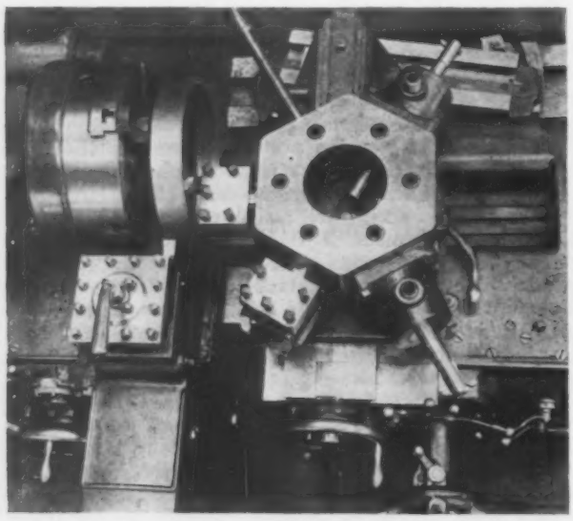
Four automatic longitudinal trips are provided for the tool post carriage, six longitudinal trips for the turret carriage, and automatic trips for the cross feed are provided. The stop rod for the longitudinal feed of the square turret is graduated in inches and mounted on an arm that can be swung out of the way when it is desired to have the square turret side of the carriage pass the chuck.

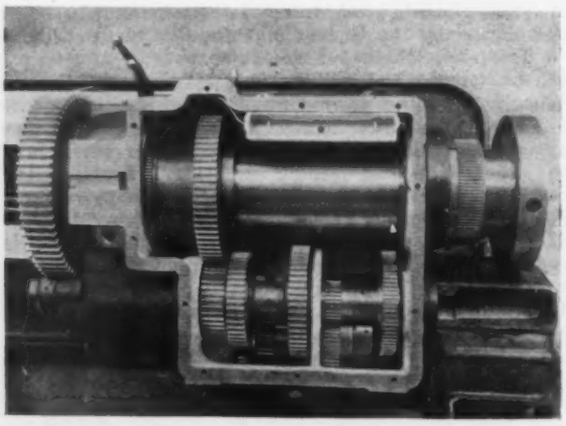
The base of the hexagon turret has a beveled flange with a 12-in. deg. taper corresponding to a similar taper on the top of the carriage slide. The two sections of the clamp ring are beveled internally to match, and are drawn together by an eccentric and lever having a mechanical advantage of 80 to 1, thus holding the turret securely against turning or lifting. The usual index bolt for positioning is provided.

The six turret stop screws are arranged in groups of three in separate heads. Each head can be moved quickly by withdrawing the pin that positions it in one of a row of holes 1 in. apart, and fine adjustment of each stop is obtained by screwing it through the head. Coarse adjustment is made rapid by backing out a hollow head set screw, to which is attached a segment of a nut, thus permitting the stop to be slid through to approximately the point desired.

The taper attachment is of large proportions, and is attached to the rear of the bed. Heavy steel-body three-jaw geared scroll chucks are regularly furnished, but four-jaw independent chucks, air operated chucks or collet chucks are available. The bar feed can be furnished, and on the larger machine a power angular feed to the square turret tool post for angles beyond the reach of the taper attachment.

The net weight of the 21-in. machine is approximately 11,000 lb., and of the 28-in. machine, 19,000 lb.





Cross-Feeding Turret Tooled for Machining a Friction Is Shown at Left; Also the Full Swing Side Carriage and Taper Attachment. The arrangement of the headstock may be noted above

International Standardizing Body May Be Set Up

A strong movement for the formation of an international body to develop and perfect industrial standards is now under way in a series of discussions being held in the Engineering Societies Building, 29 West Thirty-ninth Street, New York. The immediate stimulus to this effort at getting together arises out of several international undertakings of basic importance, the majority of which are in the mechanical industries.

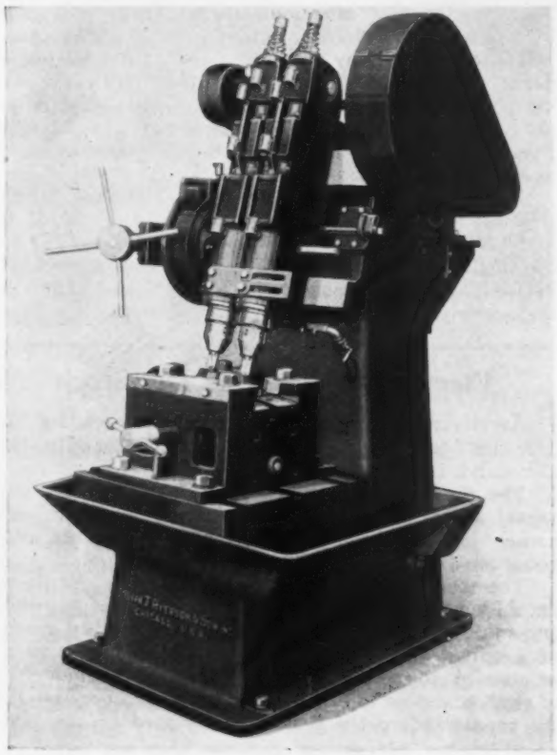
Examples are the standardization, on a national scale, of ball bearings (now in large measure an accomplished fact); harmonizing European and American screw thread systems, upon which interchange and replacement of bolts, nuts and other threaded parts depend; unifying specifications for zinc; and standardization of gaging methods and limits and fits necessary to interchangeable manufacture and mass production generally.

C. E. Skinner, chairman American Enginering Standards Committee, is chairman of the conference. Delegates are present from Austria, Belgium, Canada, Czechoslovakia, Denmark, Finland, France, Germany, Great Britain, Holland, Italy, Japan, Norway, Poland, Russia, Sweden, Switzerland and the United States.

INCLINED RAIL DRILL

Machine with Spindles at 15 Deg. Eliminates Turning of Rails for Drilling Operation

An inclined rail drill arranged to eliminate difficult handling of rails for the drilling operation has been added to the line of reclamation equipment offered by Joseph T. Ryerson & Son, Inc., Sixteenth and Rockwell



The Machine May Be Equipped With Two or Three Spindles, Which Are Inclined as Shown. The spindles are controlled by the capstan hand wheel

Streets, Chicago. With this machine the rails can be passed through the friction saw and drills without having to turn them from their starting position.

The frame of the machine is heavy and of one piece. The drill heads are clamped rigidly to the horizontal rail, as shown, which is inclined at an angle of 15 deg. and which extends across the full width of the upper portion of the frame. The speed and feed boxes are bolted to the left-hand spindle head which is permanently fastened to the rail by clamps and dowel pins. The motor is carried on a bracket on the rear of the frame, a 7½ hp. motor being usually used for a two spindle unit, and a 10 hp. motor for three spindles. The coolant tank and pump are located inside of the frame and provision is made for returning coolant to the tank. The rail is held in place while being drilled by a vise jaw which is operated from the front of the machine. The vise is adjustable to accommodate rails from 40 lb. up to the largest section. When the vise is adjusted for a certain setting it is locked in position by a large thrust screw and four Tee bolts.

In operating the machine, the rail is moved into the vise against a stop and clamped for drilling. The drills are then brought rapidly to the rail by means of the capstan hand wheel at the front of the machine. As the drills touch the rail the feed is engaged by a slight turn of the hand wheel in the same direction. When the drilling operation is completed an automatic stop disengages the feed, whereupon the drills are returned by hand. The feed can be disengaged at any point of the drilling operation by turning the capstan wheel in the opposite, or counterclockwise, direction. The clutch used for engaging and disengaging the feed is of the friction cone type.

The spindle bearings are of bronze and are carried in a heavy long sleeve. The thrust is taken by a ball thrust bearing located between the bottom of the sleeve and an integral collar on the end of the spindle. The nose of the spindle is 3 in. in diameter and has five Acme threads per inch to receive the clamping collet of the chuck. The chuck is part of the spindle, the drill bit being held close to the spindle bearing to eliminate overhang.

Two spindle speeds, 110 and 150 r.p.m. and three feeds, 0.0082, 0.0107 and 0.0139 in., are provided. Speeds are changed by interchanging the gears on the horizontal shafts. The change of feed is made in the same manner, an extra set of gears being furnished for the third feed.

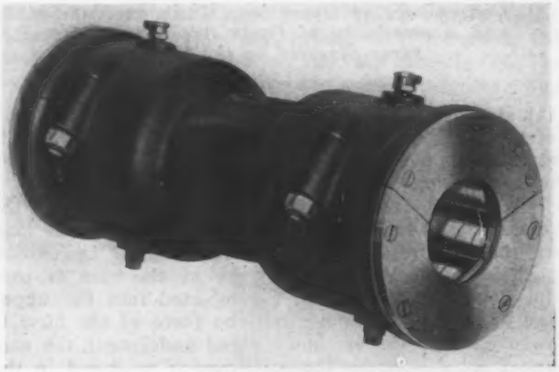
The drive of the machine is simple, only six gears being used between the initial drive shaft and the spindle. The drive from the motor to the initial shaft is by means of silent chain. Spur gears transmit the power from the initial drive shaft to the secondary shaft and the final drive to the spindle is through herringbone gears. All bearings are provided with removable bronze bushings and adequate provision has been made for lubrication.

The floor space occupied by the machine is 52 x 70 in. The height is 89½ in., overall.

New Lineshaft Bearing

A new split lineshaft bearing having a narrow center section and designed to fit all makes of hangers is being placed on the market by the Hyatt Roller Bearing Co., Newark, N. J.

The new box, here illustrated, is of dumbell shape, with twin split roller assemblies mounted at either end. The center section, which is free from bearing surface, is narrowed down to average plain bearing dimensions, to fit hangers with the narrowest frame openings. The bearing element is made up in the new-series type recently adopted by the company for its high duty bearings. The bars through each roller are said to maintain equal spacing and alinement and form a strong cage or retainer for the rollers. The box is built in two sections, the lower part forming two-thirds, and the top, one-third, this design being intended to bring the machined joint well above the oil level and to prevent oil leakage. Tightening four bolts seals the sec-



Split Lineshaft Bearing With Narrow Center Section and Roller Bearing Assemblies Mounted at Both Ends

tions around a shaft. The bosses are staggered to prevent improper fitting.

Ease of installation is emphasized, it being claimed that the bearing can be installed in less than 10 min. and while the shaft is turning. The practice of applying the bearings with the shaft turning is not, however, generally recommended by the company.

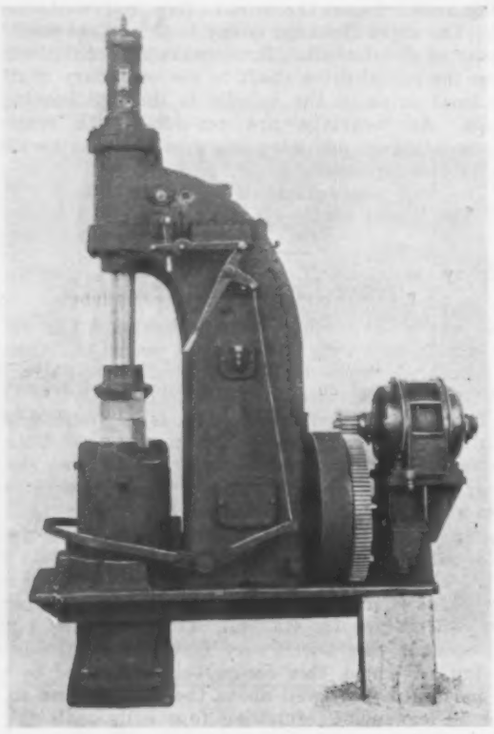
One filling of lubricant every 3 or 4 months is the only attention required. Five sizes, 1 7-16, 1 15-16, 2 3-16, 2 7-16 and 2 15-16 in. are at present available.

In THE IRON AGE of April 22, in the paragraph on page 1140, relating to the National Committee on Metals Utilization the capital letter A was inadvertently inserted after the word committee.

Pneumatic Forging Hammer with Improved Features

Sensitive control is among the features of an improved pneumatic forging hammer being placed on the market by Williams, White & Co., Moline, Ill. The machine, the invention of R. E. Bates, is available in six sizes for working stock ranging from 2½ to 8 in. square.

The machine is motor-driven and is self-contained. Close control, by means of foot treadle is provided, light, medium or hard blows being obtainable as desired. The machine is arranged so that the operator



Convenience of Operation, Minimum Number and Accessibility of Parts Are General Features Stressed by the Makers

can stand close to the anvil and have unobstructed view of the work, as well as of the ram and dies, which is stressed as permitting the hammer to be manipulated with precision.

When the treadle is released the ram lifts to the upper end of the stroke and is held suspended as long as the compressor continues running in the idling position. The downward stroke of the ram is produced by the compressed air injected into the upper end of the ram cylinder and the force of the blow is augmented by the vacuum created underneath the ram piston as well as by the compression produced in the top of the compression chamber by the previous upward stroke of the ram. A relief valve, with hand lever control, is also provided so that the compressor may be opened instantly in case the hammer is to remain idle for a short time. When the hammer is to be idle for a longer period the motor is cut off or the belt thrown onto the loose pulley.

Convenience of operation, minimum number and accessibility of parts are also features stressed by the makers. There is only one controlling valve of the rotary type. The frame and the base of the hammer are cast in one piece. The anvil is of gray iron. The lower die bolster or cap is of steel and is keyed in a diagonal position to permit working long bars either way of the dies. The method by which the upper die head is attached to the lower end of the ram is emphasized, it being arranged so that it is held solidly, is readily removable, and there are no small parts to break or work loose.

The ram consists of a long heavy solid bar, is full size the entire length and takes the force of the blow directly. It is guided both in the upper and lower cylinder heads which are far enough apart to permit of maximum length of guide as well as stroke. The piston head is forged integral with the body of the ram and it is claimed that there is no possibility of side pressure from the piston against the cylinder. The two sides of the ram are flattened at the upper end where they pass through the cylinder head, to prevent rotation of the dies.

The motor is mounted directly above the driving shaft and the drive is through a steel cut gear and Bakelite pinion, or by belt with tightener, as preferred. Tight and loose pulleys are provided with the belt drive to belt directly to line shaft. Separate countershaft with tight and loose pulleys may also be used. Five hp. is required for the smallest hammer and a 40 hp. for the largest.

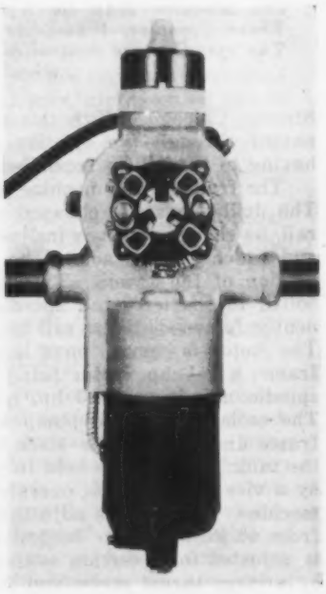
The weight of the ram, upper die and shoe, for the smallest and largest machines, respectively, is 100 lb. and 1200 lb. The blows per min. are 215 and 115 for the smallest and largest machines, and the approximate net weight of these machines is 4000 lb. and 32,000 lb., respectively.

Electrically-Operated Die Stock

An electrically-operated die stock for threading 3/8, 1/2, and 3/4 in. pipe, developed by the Oster Mfg. Co., Cleveland, is here shown.

The die head is actuated by a fully inclosed, universal motor arranged for operating from a lamp socket. An aluminum alloy housing covers the gear reduction from the motor to the die head.

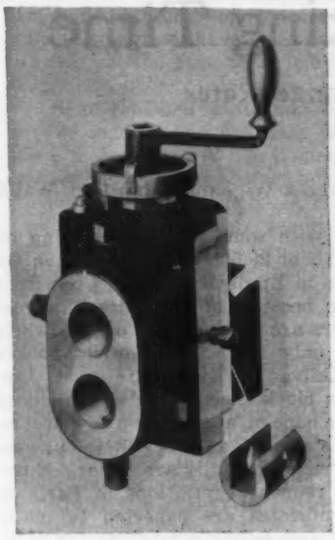
The tool, which weighs less than 35 lbs., is placed on the end of a length of pipe the same as when threading the pipe by hand. It is centered by means of a universal chuck instead of loose bushings, which is claimed to permit proper alinement without loss of time, and also to eliminate filing of the burr off the the thread before the tool can be placed on the pipe.

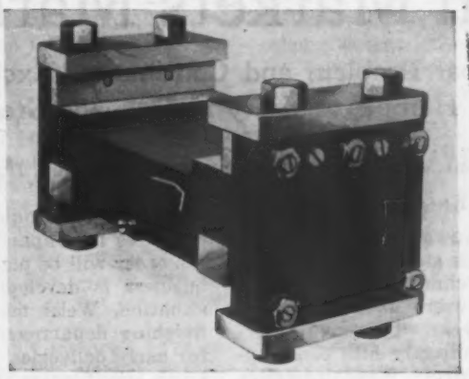


The Die Head Is Driven by a Universal Motor Inclosed Within the Housing. The tool is placed on the end of the pipe, as when threading by hand, and is centered by means of a universal chuck

A separate die head is furnished for each size of pipe. Change from one size of die head to another is made simply by pulling out a pawl which holds the die head to the rotating sleeve, thus disengaging the head from the sleeve and allowing another to be inserted in its place. The dies, however, are fully adjustable, so that over and under size threads may be cut.

The operating switch is located conveniently at the top of the tool, under the fingers of the operator. A quarter turn of this switch serves to start the die head cutting and another quarter turn stops the motor, while a further quarter turn reverses it and backs the dies off the thread.





The Vertical Slide Tool at Left; the Turret Slide Support Above; and the Multiple Cutter Head, at Right, Are New Tools for Warner & Swasey Turret Lathes

TURRET LATHE TOOLING

Three New Devices Designed to Permit Multiple and Combined Cuts

A vertical slide tool, a turret slide support, and multiple cutter head have been added to the line of tools available for the No. 4 and No. 6 turret lathes of the Warner & Swasey Co., Cleveland.

These tools, part of the new line developed by the engineers of the Warner & Swasey company, have been designed to provide rigidity and to make possible multiple and combined cuts. They are made on the quantity basis, which is emphasized by the makers as keeping the cost of their manufacture low and thus widening the field of their use in the general metal working industry.

The vertical slide tool, shown at the left in the accompanying illustrations, is a rigid turret tool for recessing, back facing, boring, chamfering and similar operations. The slide proper is provided with a large micrometer dial to permit of quick and accurate resetting. Clips are provided so that they can be placed on any of these indications for resetting purposes. Forged cutters may be quickly set by the use of the split bushing, and the two holding set screws at right angles to each other assure proper bearing surfaces for the cutters. By removing the split bushing, boring bars can be used.

The tool can be used for heavy cuts and also for cuts of large diameter. A taper gib compensates for wear and serves to increase rigidity; a binder screw rigidly clamps the slide.

The turret slide support is shown in the center illustration. This support is useful when it is necessary to have an extreme overhang of the slide, as is usually required for heavy cuts, interrupted cuts, or on long work where it is not possible to use any kind of piloting. It is arranged for clamping on the bed between the cross slide and the turret unit. It provides extreme rigidity when it is necessary to have the slide extend a considerable distance. This allows coarser feeding and gives the turret slide additional rigidity when it has to project out a considerable distance. Both vertical and horizontal adjustments are provided to permit accurate setting in relation to the turret slide to compensate for wear.

This support may be used with the vertical slide tool, previously described, when overhead piloting cannot be resorted to, and where the overhang of the turret slide is rather extreme.

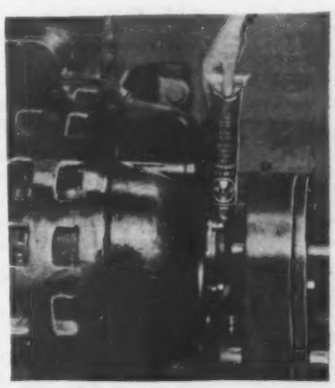
This multiple cutter head, shown in the right-hand illustration, may be used for turning, facing, chamfering and boring operations at the same time that the cross slide is also cutting. The vertical construction avoids interference of the cross slide. Inexpensive forged cutters may be used, and are held in the vertical slide by the various combinations of set screws so that each cutter may be set and adjusted independently.

The tool is made from a steel casting and is of rigid design. A series of tie screws and bushings is provided which prevents the sides from springing apart when the forged cutters are clamped in place. These can be shifted to the various holes to allow for any number of positions that are necessary for locating the cutters. A rocker bushing provided for the center hole permits the use of square shanked forged boring cutters. The four holding set screws provided at right angles to each other provide substantial bearing surfaces for holding the cutters.

Grease Tubes for Lubricating Motors

Economy and convenience are claimed for the tube method of lubricating ball bearing motors, recently announced by Fairbanks, Morse & Co., Chicago. In this method grease is furnished in collapsible tubes, each containing enough grease for a year's requirements. After flushing out the old grease with kerosene, the new grease is squeezed from the tube directly into the bearing. Four sizes of tubes are available for as many sizes of bearings.

Among the advantages claimed for the tube method of greasing is that it assures the use of the kind of grease best adapted for the ball-bearing. It is said to be of the proper adhesiveness to cling to the balls; maintaining its consistency through normal temperatures without being too stiff when starting in the cold,



The Collapsible Tubes Contain Sufficient Grease for a Year's Requirements. The grease is squeezed directly into the bearing

or melting and flowing out of the bearing when running at full load.

It is free from gritty or corrosive constituents, and the method of application prevents dirt or other injurious material from getting into the bearing. It is further pointed out that only the plug of the housing is removed and that grease is not wasted or smeared outside of the housing and no wiping is needed.

European Markets Marking Time

British Coal Problem and Continental Exchange Rates Hamper Activity in Iron and Steel

(*By Cable*)

LONDON, ENGLAND, April 26.

THE iron and steel markets are awaiting developments in the coal situation, which is still uncertain. Pig iron buyers and sellers are not inclined to commit themselves, although some domestic users have contracted for deliveries to the end of the year. Current production of Cleveland iron is going directly into consumption and prices are consequently firm. Hematite prices are easy, with both domestic and export demand dull. Foreign ore is quiet. Bilbao Rubio is nominally 21s. to 21s. 3d. c.i.f. Tees.

Finished steel continues quiet as a result of the uncertain coal outlook, some export buyers preferring to place orders with Continental works in anticipation of a stoppage here. British companies have placed a 6100-ton oil tanker with Palmers Shipbuilding & Iron Co., Ltd., Jarrow-on-Tyne, and two 10,000-ton tank ships with Swan, Hunter & Wigham Richardson, Wallsend-on-Tyne.

Tin plate is quiet, with some inquiry including oil can sizes for Japan [About 29,500 boxes of Nippon Oil Co. order will be placed in England.—Editor.] but little business is developing because of the uncertain coal situation. Welsh makers are preparing to operate their finishing departments only to clear off orders booked for early deliveries. Galvanized sheets are quiet. Japanese specification thin black sheets have been reduced to £13 10s. to £14 in the hope of attracting a few orders.

Continental markets are dull and very little business is being transacted. Prices generally are easier. European rail makers will reopen negotiations in Paris on Tuesday. German syndicates are expected to maintain the present prices and selling conditions for May, with steel production continuing at 65 per cent. On March 31 there were 79 furnaces in blast in Germany, out of a total of 208.

FRENCH TAXES INCREASE COSTS

Prices Might Be Advanced but Foreign Competition Is Keen and Mill Bookings Are Not Large

PARIS, FRANCE, April 8.—Passage of the financial bills that have been before parliament for some time has enabled French producers to begin figuring their costs on the new basis of heavier taxation. The value of the franc continues low, which is considered satisfactory by French sellers, in view of the adverse effect a rise in exchange would exercise upon export trade.

The proposed agreement between German and French producers of pig iron is still unconcluded. German makers offered to sign a provisional agreement to be effective for six months, but the French producers of steel who had not yet agreed among themselves requested delay on the pig iron agreement until they were able to enter into the arrangement. In the meantime, the German producers have concluded to postpone action until the Treaty of Commerce between Germany and France, which has been pending for about two years, is signed by the two governments.

Pig Iron.—Although two furnaces were blown out early in the month the February production of pig iron was 25,200 tons, compared with 24,600 tons in January. Phosphoric foundry iron is unchanged, but when the new costs based on the higher taxes are applied to the price an advance is expected. In some quarters a rise from the present quotation of 407.50 fr. per ton to 415 fr. per ton is predicted. Available supplies for export are small and prices firm at about 375 Belgian francs per ton. Revision by the International Pig Iron Association, which includes French, Belgian and Luxemburg producers, is expected for May and an increase of about 10 Belgian francs per ton is believed probable. Basic iron is quoted at £2 18s. to £3 per ton ($14.09 to $14.58), f.o.b. Antwerp. There is no change in the price of hematite.

Ferroalloys.—While the price of ferrosilicon is unchanged, the differentials for silicon content have been altered. For every 1 per cent of silicon more or less

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British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.86 per £ as follows:

Durham coke, del'd...	£0	18½s.				$4.50		
Bilbao Rubio ore†...	1	1½				5.22		
Cleveland No. 1 fdy..	3	12½	and	£3	13s.*	17.62	and	$17.74*
Cleveland No. 3 fdy..	3	10	and	3	10½*	17.01	and	17.13*
Cleveland No. 4 fdy..	3	9	and	3	9½*	16.77	and	16.88*
Cleveland No. 4 forge	3	8	and	3	8½*	16.52	and	16.65*
Cleveland basic	3	10	and	3	10½*	17.01	and	17.13*
East Coast mixed....	3	16½	to	3	17	18.59	to	18.71
East Coast hematite..	3	16	to	3	16½	18.46	to	18.58
Ferromanganese	15	0				72.90		
*Ferromanganese ...	14	0				68.04		
Rails, 60 lb. and up..	6	15	to	7	5	32.80	to	35.24
Billets	6	0	to	7	10	29.16	to	36.45
Sheet and tin plate bars, Welsh	6	5				30.38		
Tin plates, base box..	0	19	to	0	19½	4.62	to	4.73
Black sheets, Japanese specifications	13	10	to	14	0	65.60	to	68.04
						C. per Lb.		
Ship plates	7	0	to	7	10	1.52	to	1.62
Boiler plates	9	0	to	11	0	1.95	to	2.39
Tees	7	5	to	7	15	1.57	to	1.68
Channels	6	10	to	7	0	1.41	to	1.51
Beams	6	5	to	6	15	1.35	to	1.46
Round bars, ¾ to 3 in.	7	12½	to	8	2½	1.65	to	1.77
Steel hoops	10	10	and	11	0*	2.28	and	2.39*
Black sheets, 24 gage	11	0	to	11	5	2.38	to	2.44
Galv. sheets, 24 gage.	15	5	to	15	10	3.30	to	3.36
Cold rolled steel strip, 20 gage	18	0				3.91		

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron:(a)								
Belgium	£3	5s.				$15.80		
France	3	5				15.80		
Luxemburg	3	5				15.80		
Basic pig iron:(a)								
Belgium	3	0				14.58		
France	3	0				14.58		
Luxemburg	3	0				14.58		
Coke	0	18				4.37		
Billets:								
Belgium	4	7	to	£4	10s.	21.26	to	$21.87
France	4	7	to	4	10	21.26	to	21.87
Merchant bars:						C. per Lb.		
Belgium	5	1½	to	5	6	1.12	to	1.15
Luxemburg	5	1½	to	5	6	1.12	to	1.15
France	5	1½	to	5	6	1.12	to	1.15
Joists (beams):								
Belgium	4	15½	to	4	16	1.05	to	1.06
Luxemburg	4	15½	to	4	16	1.05	to	1.06
France	4	15½	to	4	16	1.05	to	1.06
Angles:								
Belgium	5	2	to	5	4	1.12	to	1.15
⅛-in. plates:								
Belgium	5	17	to	6	1	1.29	to	1.33
Germany	5	17	to	6	1	1.29	to	1.33
¼-in. ship plates:								
Belgium	5	7½	to	5	10	1.18	to	1.21
Luxemburg	5	7½	to	5	10	1.18	to	1.21
Sheets, heavy:								
Belgium	6	3	to	6	4	1.35	to	1.37
Germany	6	3	to	6	4	1.35	to	1.37

(a) Nominal.

than standard, 20 fr. instead of the former price of 12 fr. will be added or deducted. The differentials on silicomanganese have been increased from 12 fr. to 15 fr., and the base price has been increased 50 fr. per ton.

Semi-Finished Material.—The daily production of ingots increased in February to 22,500 tons from 21,300 tons in January. While domestic prices are being held quite firmly, there being but small available stocks, demand continues small. A slight increase in domestic inquiry for blooms is reported but the price is unchanged. Blooms for export are weaker, with the top of the present market about £3 19s. per metric ton ($19.20), f.o.b. Antwerp. Billets are scarce and the price fairly firm at £4 6s. to £4 6s. 6d. per ton ($20.90 to $21), f.o.b. Antwerp.

Finished Material.—Some sizable inquiries have appeared in the past few days and the market is moderately firm, with mills offering about three months' delivery on some products. Beams are slightly easier, with domestic prices ranging from 660 to 690 fr. per ton. On export sales mills are resisting rather successfully the efforts of buyers to secure lower prices. The current quotation on beams for export is £4 15s. to £4 16s. per metric ton ($23.08 to $23.33), f.o.b. Antwerp. On other products the export market is weak, with Belgium and Luxemburg and some Lorraine mills quoting lower prices, in some instances as low as £5 10s. ($26.73) per metric ton. German mills are maintaining £5 16s. ($28.18) per metric ton. Angles are quoted at £5 to £5 1s. ($24.30 to $24.43) per metric ton, f.o.b. Antwerp.

Wire Rods.—The domestic market continues unchanged at 740 to 780 fr. per metric ton, but export prices are weaker, with No. 20 gage quoted at £5 10s. ($26.73) per metric ton, f.o.b. Antwerp.

JAPAN BUYS TIN PLATE

Oil Company Buys 56,000 Boxes—Rails for Manchuria—German Mill Quotes Canada on Girder Rails

NEW YORK, April 27.—Among the current inquiries from Japan is a call for bids from the South Manchuria Railway Co. for 75 miles of 65-lb. rails and accessories. Most of the rail business of this road has been placed with Continental mills in the past two years. Should the European makers adhere strictly to the new basis of £6 per metric ton (about $29) f.o.b. Antwerp, which was established upon the formation of the International Rail Makers' Association, American mills might have some opportunity of securing the business. Exporters to Japan have recently been asking for quotations on 21 miles of 60-lb. rails, also for use in Manchuria.

The tin plate for the Nippon Oil Co. was placed with Iwai & Co., New York, and Mitsui & Co., London, the former receiving about 29,500 boxes and the latter about 27,500 boxes. While Mitsui & Co. bid on Welsh tin plate, it is not known whether Iwai & Co. will furnish Welsh or American. Prices on light gage black sheets are low in Japan, and with American makers quoting about $82 per ton, c.i.f. Japanese port, no business is expected to result. In addition, the further softening of British sheet prices has exercised a demoralizing effect on the Japanese domestic market, United Kingdom makers having reduced quotations to as low as $77 per ton, c.i.f. Japan, in some instances.

Importers of steel in New York report an active business in small lots of reinforcing bars, structural material and nails. Foreign quotations on nails seem to range from about $2.50 per 100-lb. keg, c.i.f., duty paid, offered by agents of Belgian mills, to about $2.85 per 100-lb. keg, c.i.f., duty paid, quoted by German sellers. Reinforcing bars range from about 1.75c. per lb. for structural grade, Bessemer steel, to 1.90c. or 1.95c. per lb. base, on open-hearth quality. Structural steel prices are about 1.65c. per lb., base, c.i.f., duty paid.

American open-hearth girder rails recently met the competition of the German product on about 400 tons for Toronto. The quotation of the German mill on open-hearth quality was about $58 per ton, delivered, but award was made to the American bidder at about $56 per ton, delivered. Deducting freight rates and other charges, it would appear that much less than the usually accepted differential of $9 per ton between standard rails and girder sections obtained.

BELGIAN PRICES DECLINE

Buyers Demand Lower Quotations as Franc Rises—French Competition Increases —Pig Iron Firm

ANTWERP, BELGIUM, April 10.—The steel markets are in an unstable condition with prices softening despite the efforts of mills to prevent further reductions. Much of the present confusion is contributed by the sudden and violent fluctuations of exchange, and the recent rise in value of the Belgian franc has exercised its effect on business. Buyers and prospective purchasers are largely exporters and they are making determined efforts to secure lower prices from the makers, believing on a basis of recent reports that mills are in many instances running out of tonnage.

Domestic business is quiet, the rapid fluctuations of exchange influencing buyers to refrain from buying as long as possible. While the recent recovery of the franc has resulted in a slight decline of prices to domestic users, the entire lack of stability in the market is responsible for strong pressure for still further reductions.

Pig Iron.—Prices are being maintained, assisted by a good domestic and export demand and the agreement under which producers are operating. The lowest price on foundry iron to domestic consumers is about 400 fr. per metric ton, delivered, and the export price is about £3 5s. per metric ton ($15.95), f.o.b. Antwerp. Medium phosphorus foundry is quoted at £3 12s. per metric ton ($17.65), f.o.b. Antwerp, which is apparently considerably higher than the German price. Bessemer hematite is quoted at about $18.10 per metric ton, f.o.b. Antwerp, and the British price of £4 to £4 2s. per ton ($19.45 to $19.90), c.i.f. Antwerp, is too high to interest Belgian consumers. French hematite, however, is quoted as low as £3 10s. ($17) per ton, lower than the Belgian foundry iron price. Dutch medium-phosphorus foundry has been sold as low as £3 17s. ($18.70) per metric ton, delivered consumer's works.

Semi-Finished Material.—The market continues weak and with buyers offering lower prices each time they enter the market, some mills are temporarily refraining from quoting. Thomas grade billets are apparently about £4 6s. per metric ton ($21.05), f.o.b. Antwerp. Slabs of Thomas grade are about £4 10s. per metric ton ($22.05), f.o.b. Antwerp.

Finished Material.—The recent recovery of the Belgian franc has disorganized the market as completely as recent periods of sudden depreciation. The volume of transactions is small and buyers for export are pressing for lower quotations, partly because of the belief that most mills are running out of backlogs and partly to meet increased foreign competition at low prices. Both French and Belgian mills are offering concessions to secure much-needed business. Bars are weak and despite efforts of makers to advance the market from £5 2s. to £5 3s. per metric ton, the price under pressure of export buyers has declined to £5 1s. ($24.42), and even as low as £5 ($24.30) per ton. These lower prices are explained by the weakness of French mills, who are becoming more serious as competitors for export business than German sellers. Both French and German mills are quoting lower prices on beams than Belgian sellers have been able to meet, the latter maintaining about $23.30 per ton, f.o.b. Antwerp, which is too high for export business. Wire rods are about $28.20 per ton, and reinforcing bars are about $27.45 per ton, f.o.b. Antwerp.

Sheets.—Fluctuation of exchange and lack of demand render establishment of the market difficult. German competition continues strong. Belgian mills quote light gage Thomas sheets at about $40.45 per ton and medium gages at $35.55, f.o.b. Antwerp.

Exports Higher; Imports Lower

Heavy Gains in Exports to Japan of Rails, Black Sheets and Tin Plate—Five Countries Closely Grouped in Import Tonnages

WASHINGTON, April 23.—Exports of iron and steel increased to 169,438 tons in March, against 157,187 tons in February, while imports in March declined to 93,107 tons, compared with 100,273 tons in February.

For the nine months ended March, 1926, exports aggregated 1,421,487 tons, compared with 1,204,139 tons for the corresponding period one year ago. This represents a gain of 217,348 tons for the nine months and it is interesting to observe that a similar gain was made during the same period in imports. The actual increase in imports was 212,522 tons, the total for the nine months ended in March having been 740,199 tons, against 527,677 tons for the corresponding period of last year.

Gains in exports in March as compared with February were reflected in a number of primary products, such as steel bars, plates, galvanized and black steel sheets, tin plate and plain and structural shapes. One of the outstanding decreases was in steel rails.

As usual, Canada was the leading country of exportation, taking 76,763 tons, while Japan, including Chosen, was a poor second, taking only 20,592 tons. No other country reached 7000 tons. For the three months ended March, 1926, Canada took 188,422 tons, a substantial increase over the 127,746 tons taken during the corresponding period of last year. A striking gain was made in exports to Japan during the first quarter, as they amounted to 66,415 tons, compared with only 31,424 tons in the corresponding quarter of one year ago. Rails, black steel sheets and tin plate shared heavily in this advance. Galvanized sheets to Japan, on the other hand, showed a loss.

The figures show that, generally, there were gains made in exports to the principal foreign markets during the first quarter of 1926, when compared with the

Exports of Iron and Steel from the United States

(In Gross Tons)

	March		Nine Months Ended March	
	1926	1925	1926	1925
Pig iron	1,489	2,037	26,101	23,108
Ferromanganese	6	1,026	1,584	3,177
Scrap	10,326	3,414	62,969	35,846
Pig iron, ferroalloys and scrap	*11,821*	*6,477*	*90,654*	*62,131*
Ingot, blooms, billets, sheet bar, skelp	3,239	6,308	66,742	71,878
Wire rods	2,811	1,643	13,768	13,115
Semi-finished steel	*6,050*	*7,951*	*80,510*	*84,993*
Steel bars	13,622	12,389	91,985	71,025
Alloy steel bars	751	838	2,844	2,413
Iron bars	280	625	2,605	3,056
Plates, iron and steel	13,250	11,240	83,252	54,995
Sheets, galvanized	15,751	13,047	116,542	113,087
Sheets, black steel	14,203	6,264	102,360	84,189
Sheet, black iron	2,282	1,333	15,193	8,807
Hoops, bands, strip steel	6,173	4,195	35,410	23,813
Tin plate, terne plate	15,500	14,424	133,984	104,552
Structural shapes, plain material	13,408	6,741	93,812	76,155
Structural material, fabricated	7,639	5,905	65,814	50,437
Steel rails	7,113	18,709	105,525	136,620
Rail fastenings, switches, frogs, etc.	2,851	2,496	30,820	21,490
Boiler tubes, welded pipe and fittings	20,278	19,634	261,717	136,961
Plain wire	3,813	3,960	26,831	22,041
Barbed wire and woven wire fencing	4,905	7,700	49,232	66,121
Wire cloth and screening	110	121	1,481	1,005
Wire rope	507	419	3,391	3,361
Wire nails	1,148	818	8,678	7,565
Other nails and tacks	796	911	6,809	6,461
Horseshoes	41	46	567	613
Bolts, nuts, rivets and washers, except track	1,106	1,510	11,910	12,963
Rolled and finished steel	*115,527*	*132,725*	*1,190,762*	*1,007,731*
Cast iron pipe and fittings	1,498	3,089	23,304	21,261
Car wheels and axles	760	2,071	12,829	16,314
Iron castings	745	775	7,753	6,403
Steel castings	1,208	690	3,795	3,895
Forgings	357	100	1,788	1,411
Castings and forgings	*4,568*	*7,025*	*49,469*	*49,284*
All other	1,472	.....	10,092	.....
Total	169,428	154,178	1,421,487	1,204,139

Imports of Iron and Steel into the United States

(In Gross Tons)

	March		Nine Months Ended March	
	1926	1925	1926	1925
Pig iron	54,825	50,803	373,629	234,983
Ferromanganese*	4,141	5,021	45,756	50,147
Ferrosilicon	665	670	3,122	6,465
Scrap	2,523	4,755	67,208	70,556
Pig iron, ferroalloys and scrap	*62,154*	*61,249*	*489,715*	*362,151*
Steel ingots, blooms, billets and slabs	1,942	3,489	16,388	26,420
Iron blooms, slabs, etc.	.....	.....	779	.....
Wire rods	576	314	6,244	3,832
Semi-finished steel	*2,518*	*3,803*	*23,411*	(a)*30,252*
Rails and splice bars	3,930	6,434	20,065	34,206
Structural shapes	5,627	7,003	50,885	40,105
Boiler and other plates	532	16	1,685	777
Sheets and saw plates	147	646	2,769	2,635
Steel bars	8,468	4,016	50,165	9,414
Bar iron	527	1,177	5,381	4,663
Hoops, bands and cotton ties	1,592	.....	8,286	.....
Tubular products (wrought)	2,864	(a)6,718	26,367	(a)32,185
Nails, tacks, staples	275	111	2,784	386
Tin plate	28	27	309	259
Bolts, nuts, rivets and washers	72	16	191	109
Round iron and steel wire	367	266	3,142	1,991
Barbed wire	267	.....	5,545	.....
Flat wire, strip steel	272	234	1,841	1,341
Steel telegraph and telephone wire	82	.....	215	5,389
Wire rope and strand and insulated wire	278	152	1,121	
Other wire	141	.....	885	
Wire cloth and screening	50	.....	296	.....
Rolled and finished steel†	*25,519*	*26,816*	*181,932*	*133,451*
Cast iron pipe	2,718	(b)	43,128	(b)
Castings and forgings	198	238	2,013	1,823
Total	93,107	92,106	740,199	527,677
Manganese ore*	27,391	24,330	275,793	141,257
Iron ore	184,122	162,695	1,674,402	1,689,966
Magnesite‡	3,511	10,361	44,405	42,147

*Manganese content only. Shipments of ore from Cuba, which are stated in gross weight, amounted in March to 237 tons.

†Prior to January, 1926, this includes some cast iron pipe, under the heading "tubular products."

‡Dead burned.

(a) Includes some tonnage of cast iron pipe in earlier months.

(b) Included in tubular products, above.

Sources of American Imports of Iron Ore

(In Gross Tons)

	March		Nine Months Ended March	
	1926	1925	1926	1925
Spain	22,311	20,420	90,688	100,506
Sweden	.....	.....	105,744	248,309
Canada	298	1,003	5,650	4,374
Cuba	29,700	72,820	375,012	254,508
Chile	113,100	60,200	935,000	909,475
French Africa	12,611	7,400	97,286	154,289
Other countries	6,102	852	65,022	18,505
Total	184,122	162,695	1,674,402	1,689,966

same period of 1925. Totals were 501,210 tons, against 399,461 tons in the first quarter of last year.

Of the 13,250 tons of plates exported in March, Canada took 12,028 tons; while of the 15,500 tons of tin plate exported during that month Canada took 3538 tons; Japan, 3376 tons and Italy, 2498 tons. Canada also was the leading country of exportation in March of a number of the other heavy products. Of the 8129 tons of casing oil line pipe exported in March, Venezuela took 2846 tons; Argentina, 1079 tons; Colombia, 911 tons. Exports of black welded pipe for the month amounted to 5736 tons, of which Japan, including Chosen, took 1735 tons; Canada, 1033 tons; United Kingdom, 878 tons. Galvanized welded pipe exports in March were 3127 tons, of which Colombia took 607 tons and Peru 592 tons.

Germany was the leading source of importation of iron and steel products in March, providing 17,695 tons. The Netherlands, credited with 14,795 tons, ranks second, although it is likely that some of this tonnage actually originated in Germany. Belgium was a close third, providing 14,751 tons as against 14,558 tons from British India and 14,424 tons from the United Kingdom.

Of the imports, amounting to 272,387 tons during the first quarter of the present year, the United Kingdom was the leading source, providing 52,871 tons, while Germany ranked second with 48,968 tons. Belgium, with 37,278 tons, was third.

Imports of structural shapes in March amounted to 5627 tons, of which Belgium provided 2976 tons; the Netherlands was credited with 531 tons and France, 701 tons. Steel bar imports in March totaled 8468 tons, of which Belgium provided 3801 tons, while the Netherlands was credited with 2355 tons.

Rail imports in March amounted to 3837 tons, of which 2471 tons came from Belgium and 1232 tons was credited to the Netherlands. Cast iron pipe imports in March were 2718 tons, France providing 2002 tons and Belgium 704 tons.

Exports of Iron and Steel in Gross Tons

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914	2,406,218	221,582	145,720
*Average, 1915 to 1918	5,295,333	438,462	1,468,020
*Average, 1919 to 1923	3,078,724	123,837	149,218
Calendar year 1924	1,805,073	41,478	114,417
January, 1925	141,777	1,298	5,764
February	102,299	1,413	7,516
March	155,384	2,037	7,951
April	155,375	1,632	6,831
May	150,612	2,316	7,360
June	136,847	2,507	7,804
Fiscal year 1925	1,663,084	29,563	107,988
July	139,861	2,348	10,701
August	188,465	5,944	8,024
September	136,791	3,349	8,186
October	141,817	2,874	8,432
November	171,134	4,272	16,783
December	142,209	2,626	12,282
Calendar year 1925	1,762,571	32,674	108,681
January, 1926	174,585	1,663	4,388
February	157,187	1,478	5,615
March	169,438	1,489	6,050
Nine months	1,421,487	26,101	80,519

*Calendar years.

Imports of Iron and Steel in Gross Tons

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
Calendar year 1924	556,814	209,109	59,910	255,157
January, 1925	77,105	41,344	7,165	15,498
February	92,353	47,803	10,997	9,666
March	92,115	50,803	5,691	24,330
April	71,233	33,299	7,699	14,941
May	67,789	21,260	8,721	29,139
June	82,853	35,657	4,259	20,720
Fiscal year 1925	749,393	325,199	77,291	186,939
July	64,642	24,881	3,601	28,586
August	68,489	30,707	3,526	34,168
September	68,445	29,917	3,594	22,709
October	80,045	37,709	11,226	23,054
November	79,771	34,712	6,173	33,238
December	98,400	53,333	7,703	36,908
Calendar year 1925	943,240	441,425	80,269	265,688
January, 1926	79,067	48,428	3,055	37,498
February	100,273	59,122	5,194	27,239
March	93,107	54,825	4,606	27,391
Nine months	740,199	373,629	48,878	275,793

*Not included in "total imports." These figures are for manganese contents of the ore.

United States Imports of Pig Iron by Countries of Shipments

(In Gross Tons)

	March		February
	1926	1925	1926
British India	14,558	15,049	9,990
Netherlands	9,231	5,747	6,670
Germany	13,900	15,648	16,869
United Kingdom	12,250	7,702	15,826
Canada	559	1,644	593
Belgium	1,733	2,226	1,230
France	2,150	2,687	7,691
Other countries	444	100	253
Total	54,825	50,803	59,122

United States Imports of Iron and Steel Products by Countries

(In Gross Tons)

	March, 1926	January Through March, 1926
Austria	98	233
Belgium	14,751	37,278
Czechoslovakia	33	625
Denmark	....	31
Finland	457	457
France	6,813	28,686
Germany	17,695	48,968
Italy	38	38
Lithuania	....	1,530
Netherlands	14,795	33,184
Norway	1,910	2,426
Sweden	2,359	6,544
Switzerland	1	5
United Kingdom	14,424	52,871
Europe	73,374	212,876
Canada	4,947	14,796
Panama	140	6,634
Mexico	87	172
British West Indies	....	103
Cuba	....	3,597
Dominican Republic	....	62
Chile	....	4
British India	14,558	34,130
Other Asia	1	10
Total	93,107	272,387

Slab Zinc and Rolled Zinc in 1925

Production of slab zinc at zinc reduction plants in the United States in the year 1925 amounted to 611,645 net tons, valued at $92,970,000, according to statistics compiled by the United States Bureau of Mines. This compares with the 1924 production of 552,825 tons, valued at $71,867,000. Of the 1925 output, 572,946 tons was primary production, 555,631 tons being from domestic ores and 17,315 tons from ores originating in Canada and Mexico. Redistilled secondary production amounted to 38,699 tons. Oklahoma, where 138,906 tons were smelted, led all States in production. Illinois, with 109,672 tons smelted, was second, and Pennsylvania, with 99,899 tons smelted, was third.

The apparent consumption of primary zinc in the United States in 1925 amounted to 500,147 tons, as compared with a consumption of 448,257 tons in 1924.

The total production of rolled zinc in 1925, as reported by producers to the Bureau of Mines, amounted to 142,263,945 lb., an increase of 17 per cent over 1924.

It is estimated that about two-thirds of the total stock in the International Nickel Co. is held in Canada. This has not always been the case, for from time to time strong interests in the United States have attempted to dominate the situation. The International Nickel Co. is installing several new units at Port Colborne, Ont., to augment the output of electrolytic nickel. At Sudbury the company is preparing to extend its plant on a scale that calls for the expenditure of approximately $8,000,000.

BOOK REVIEWS

Fuels and Their Combustion. By Professors Robert T. Haslam and Robert P. Russell. Pages, 809; 6 x 9 in.; 304 illustrations. Published by the McGraw-Hill Book Co., New York. Price, $7.50.

This work, which the reviewer believes to be the most important on the subject yet produced in English, is the outgrowth of a series of lectures in the Massachusetts "Tech" and should serve not only as a comprehensive technical and statistical treatment of the subject, but also as an excellent bibliography for those wishing to go even further into the study. To review its entire contents in detail in these pages would be impracticable.

It may well be imagined that in a country such as this, where there is an annual consumption of mineral fuels alone, representing over 21 trillions (21,000,000,000,000) of British thermal units, and the bill for which is about $5,000,000,000 at the mines, and double that at the point of consumption, and where 10 to 15 per cent of the total production cost to manufacturers is for coal, this topic "gives to think."

But the real reason for this book and for its careful study may be seen in its Fig. 2, showing that the losses in average coal utilization are about twelve times those in the best practice, while even this latter does not realize half the coal's thermal value.

The various technical classifications of coal receive considerable attention and comparison. Interesting hints are given as to the correct method of stacking and dumping coal—by evenly mixing the lumps and the fine material. In view of the rapid exhaustion of some of our best coal fields the devotion of a chapter to such other primary fuels as shale is fully justified. Something entirely new to the general reader, and to most fuel consumers, is colloidal fuel, an emulsion of powdered solid fuel and oil, developed by the Submarine Defense Association during the war. It is to be regretted that the authors have given briquets so little consideration.

Chaper VIII, on the chemistry of combustion reactions, handles the laws dealing with the most vital questions in combustion—the amount of heat developed, and the thoroughness and rapidity of the combustion reaction; taking up the eight principal chemical reactions most frequently encountered.

The tenth chapter takes up combustion calculations. It would be tough reading to many, if it were not rendered easier by the method of indicating the steps in computation of "heat balance" by a modification of that of Walker, Lewis and McAdams; first indicating the result to be accomplished, then above each step describing the character of the factor used. As the calculations are broken down into simple steps, the reader will grasp the method more easily. It is just because pages 217 to 244 inclusive appear complicated that they are really simple. The most satisfactory method of figuring the heat value of solid fuels is stated to be Dulong's, which has a probable error of about 2 per cent, (except in those with high oxygen content) and with oil fuels; but it has the disadvantage of calling for an ultimate analysis, whereas Kent's gives the heating value approximately from the proximate analysis.

As more coal is burned on grates than any other way, Chapter XII, dealing therewith, should interest the greater number of readers. The effects of firing rate on fuel-bed temperature, and air velocity on combustion velocity, are properly taken care of; and the combustion space given due treatment, with regard to combustion rate, thoroughness of combustion, quality of coal, etc. An interesting illustrative problem is included to show the manner in which the Bureau of Mines data may be used to solve problems of design, and the influence of various factors, as affecting ration of cumbustion space to grate area, volume of combustion space, per cent of excess air, and heat loss through unburned CO.

Chapter XIV goes very thoroughly into mechanical stokers and furnaces; those portions regarding preheated air being especially valuable. Powdered coal takes up an interesting and well illustrated section. Fuel oil is considered at length. Chapter XVII takes up furnace efficiency.

Producer gas—which is made in about 11,000 producers in this country, over half being in the steel industry, which latter gasifies about 15,000,000 tons of coal a year—occupies Chapter XVIII. There is an excellent summary of the precautions necessary for efficient producer operation. Blue water-gas and carburetted water-gas are given considerable prominence, the former being mentioned incidentally in connection with its use as raw material for such chemicals as wood alcohol (methanol) and fuel for automobiles.

What the authors term the "carburation" of coal, which the reviewer would prefer to call its destructive distillation, takes up Chapter XX, which goes very thoroughly into the question of changes of composition during this process. These changes are well illustrated by a representation (Fig. 254) of a model by Evans constructed by combining the hourly volume and the calorific value curves so that the length represents the coking time, the height the rate of gas evolution and the width the heating value. In the case shown 5 per cent of the total gaseous thermal yield is produced in the first 10 min.; later, methane and other rich hydrocarbons form but a small percentage of the gases, while at last there is little but hydrogen produced.

Table CXLVI compares the productions from high and low temperature "carbonization." The prospect of low-temperature distillation becoming common is based on the depletion of our best anthracite seams, and the discovery of new fields for the application of low-temperature tars and oils; and the process may be of use to the gas companies when oil gets too dear to render it profitable to use it for enrichment. Very little space is devoted to low-temperature plants, in view of the fact that the present plants and processes will probably soon be obsolete.

Altogether, this book should be a standard work of reference for some time to come.

ROBERT GRIMSHAW.

Ferrous Metals. By M. S. Birkett, of the National Federation of Iron and Steel Manufacturers. Pages 165, 7½ x 10 in. Published for the Federation of British Industries as one of the "Resources of the Empire" series by Ernest Benn, Ltd., 8 Bouverie Street, E. C., London, England. Price, 21s.

For those who desire to have within the covers of one book all of the essential information regarding the production of iron and steel in the British Empire, including, of course, the Dominions, together with much other related information, this book may be highly recommended. In 165 pages it has been impossible to go into great detail, but the reader will be surprised by the scope of the data that have been compiled and condensed for the reader who does not have ready access to such information elsewhere.

The book deals almost entirely with the commercial phases of the British iron and steel industry; technical processes are not described except incidentally as they may happen to have a bearing on commercial practice.

Beginning with an historical sketch, the book takes up chapter by chapter the raw materials and finished products. In the historical sketch will be found such valuable tables as the number of blast furnaces and output of pig iron from 1740 down to 1923; the pig iron output by districts; exports of iron and steel by countries and products in 1923; the effects of the war on the British iron and steel industry as well as on those of other European countries.

The chapter on raw materials goes into the production, imports and exports of iron ore; the iron ore resources of Great Britain; the fuel and limestone resources. Similarly the situation in each of the Do-

minions is taken up, and the information pertaining to the growth of the industry in India may have particular interest for some American readers in view of the large pig iron imports from that country.

Pig iron, wrought iron, forgings, heavy steel castings, tin plates, sheets, wire, shipbuilding material, structural steel, hoops and strips, rails, tires and axles, are dealt with in separate chapters and there is much in the way of specialized data for those interested in these products alone.

Future of British Industry

What of the future of the British iron and steel industry? is the question asked in conclusion. The author's answer to this is in part as follows:

"Great Britain, the pioneer in the iron and steel industry, found itself surpassed in production by the United States in 1890 and by Germany some years later. The supremacy of the United States can hardly expect to be challenged, but the changes due to the peace treaty place Great Britain, France and Germany in the position of competitors for the second place. This position was attained by Great Britain in 1923 owing to a special combination of circumstances, and the question arises as to how it may be maintained. . . .

"The United Kingdom and the United States have an increased surplus for export, but whether the United States will build up an export trade commensurate with the one she attained during the war is a question to which no definite answer can yet be given. Germany, with a diminished exportable surplus, may be expected to concentrate on the finishing industries, and will prefer to export highly finished products in place of the pig iron and semi-finished steel which she sent abroad in such quantities prior to the war. France now takes a prominent place among the exporting nations, and it is probable that France will be content for some time to export pig iron and semi-finished steel. The fundamental physical conditions, however, which enabled Great Britain to continue making steel before the war remain substantially unaffected. We are the only steel producing country with suitable coal supplies on the coast to which the foreign ore can be brought by sea and the product reshipped." C. E. W.

Cost Accounting. By W. E. Lawrence, C. P. A. Pages 527, 6 x 9 in.; Charts, 19; Diagrams, numerous. Published by Prentice-Hall, Inc., New York. Price, $5.

This book, with its clear typography, is a valuable addition to the abundant literature on the subject (it is the twenty-third on that topic in the reviewer's library, which of course is not all-inclusive). It places emphasis upon cost accounting theory and procedure, with secondary consideration of economic and managerial matters. Among other useful features there are instructions for writing up a practise set comprising one month's transactions.

It is rather weak in actual record forms, but it has excellent diagrams showing transfers of direct material costs, and direct labor costs, in the general ledger accounts, and subsidiary records for the specific order cost system and the relation between the accounts in specific order accounting; also the routine of purchase and receiving, and storing and issue, of materials. The charts are among the most valuable features of the work.

Two methods of valuation of materials are shown—the "first-in-first-out" and the "average cost" method; the author preferring the latter, (neither being exact.)

According to Mr. Lawrence, interest is not included as a fixed charge. Depreciation by obsolescence is given but little attention. That power "is consumed in connection with the passage of time and should not be in proportion with the direct labor," will hardly hold water in many industries. The author, preferring distribution of expense by direct labor hours, proves his case, but omits to consider instances where time on piece-work is not entered.

After all, no system of cost accounting is accurate unless the cost accountant is permitted to use judgment. This, however, must be based on experience, especially in the industrial line in question. Very properly, the author scores distribution of sales expense on the basis of selling prices. Whether the cost of salvaging defective material or articles should be charged to production cost is a matter of disagreement among experts. Like most other accountants, the author considers 80 per cent of capacity as normal output. Evidently he has never kept accounts in a ship yard.

On the controversial topic of interest on investment the author considers the much mooted question of whether it should or should not be included in overhead; some saying that such interest is not outgo, hence cannot be a cost, others hedging beautifully by allowing it on borrowed capital, but on one's own. He hits the nail on the head when he says that the cost accountant, unlike the auditor, must, to a certain extent, be a prophet; but he lays no weight on the necessity of collaborating with the purchasing and sales department heads.

Many legal phases of cost accounting are taken up; for instance, the right of the manufacturer to attempt to use cost data to destroy competition by unfair means; and the interchange of cost information among users of one and the same system. A number of opinions on cost accounting are quoted. There is an excellent alphabetical index, and an appendix with 150 very practical questions and 51 problems. G.

New Books Received

Foundry Practice. Third edition. By R. H. Palmer. Pages 432, 5½ x 8¼ in.; illustrated. Published by John Wiley & Sons, Inc., 440 Fourth Avenue, New York. Price, $3.

Proceedings of the Lake Superior Mining Institute. Vol 24. Pages 374, 6 x 9 in.; illustrated. Published by the Institute at office of the secretary, Ishpeming, Mich.

Foundry Cost Accounting. By Robert E. Belt. Pages 267, 6¼ x 9¼ in.; illustrated. Published by Penton Publishing Co., Cleveland.

Ouroboros or The Mechanical Extension of Mankind. By Garet Garrett. Pages 101, 4½ x 6½. Published by E. P. Dutton & Co., 681 Fifth Avenue, New York. Price, $1.

Forecasting, Planning and Budgeting in Business Management. By Percival White. Pages 267, 5¾ x 8¼ in.; illustrated. Published by McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, $2.50.

Proceedings of the American Society for Testing Materials. Twenty-eighth annual meeting, vol. 25, 1925. Part I, Committee Reports, Tentative Standards. Pages 962, 6¼ x 9¼ in.; illustrated. Issued by the American Society for Testing Materials, 1315 Spruce Street, Philadelphia.

Proceedings of the American Society for Testing Materials. Twenty-eighth annual meeting, vol. 25, 1925. Part II, Technical Papers. Pages 454, 6¼ x 9¼ in.; illustrated. Issued by the American Society for Testing Materials, 1315 Spruce Street, Philadelphia.

Cost of Government in the United States. Pages 138, 6¼ x 9¼ in.; illustrated. Published by National Industrial Conference Board, Inc., 247 Park Avenue, New York. Price, $2.

Journal of the Institute of Metals. Vol. 34. Pages 799, 5¾ x 8¾ in.; illustrated. Published by the Institute of Metals, 36 Victoria Street, London, S. W. 1. Price, 31s. 6d.

Die Beweglichkeit Bindiger und Nicht Bindiger Materialien. By V. Pollack. Pages 139, 6¾ x 9¾ in.; illustrated. Published by Wilhelm Knapp, Halle, Germany. Price, 9.80 goldmarks.

Die Anwendbarkeit der Geophysikalischen Lagerstätten Untersuchungsverfahren, Insbesondere der Elektrischen und Magnetischen Methoden. By Rudolf Krahmann. Pages 40, 6¾ x 9¾ in.; illustrated. Published by Wilhelm Knapp, Halle, Germany. Price, 2.50 goldmarks.

Actualités Métallurgiques. By Pierre Dejean. Pages 283, 6½ x 10 in.; illustrated. Published by Dunod, 92 Rue Bonaparte, Paris (VI). Price, 36 fr.

Commercial Steel Castings for 6 Years

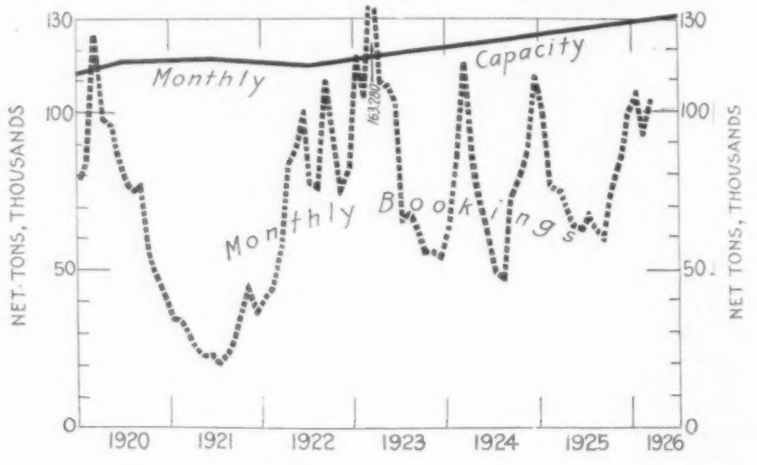
Revised Figures from More Complete Data—Bookings Show Wide Fluctuations from Month to Month

MORE than four-fifths of the commercial castings capacity of the United States is now comprised in the reports issued monthly by the Department of Commerce. The new list includes 107 firms, of which 39 were not previously reported. Complete revised data as issued by the department follow in our tables.

Bookings in a number of months have exceeded the monthly capacity. This is true in March, 1920, when railroad specialty bookings showed 140 per cent of capacity, resulting in total bookings reaching 107 per cent. In April, June and September, 1922, bookings of railroad specialties again reached more than 100 per cent, but without bringing the totals above that figure. Again in January and March, 1923, railroad bookings exceeded 100 per cent, reaching 168 per cent in March. This month was the only one within the six years of the survey in which bookings of miscellaneous castings exceeded 100 per cent, the figure having been 113. Resulting from this the total bookings for the month amounted to 137 per cent. Again in March and in December, 1924, railroad bookings exceeded capacity.

Interspersed with these high output figures are much lower figures. Thus, between the two last railroad figures exceeding 100 per cent was one month as low as 36 per cent. Similar conditions have prevailed throughout the period, while in 1921, during the heavy business depression, there were five successive months when railroad bookings did not reach 20 per cent.

Bookings of Commercial Steel Castings, Monthly, for More Than Six Years, Are Shown in the Diagram. Rarely have they exceeded capacity. Below are the monthly figures.



(Net Tons)

	Total	Railroad Specialties	Miscellaneous
1920			
January	79,393	29,522	49,871
February	84,392	30,065	54,327
March	124,678	65,442	59,236
April	98,183	43,933	54,250
May	96,385	43,282	53,103
June	84,441	30,148	54,293
July	77,535	31,973	45,562
August	75,422	33,745	41,677
September	77,383	36,870	40,513
October	55,584	20,056	35,528
November	48,391	18,109	30,282
December	41,379	13,810	27,569
Total	943,166	396,955	546,211
1921			
January	33,824	11,327	22,497
February	33,444	14,574	18,870
March	28,971	10,487	18,484
April	24,097	7,775	16,322
May	22,903	7,500	15,403
June	23,243	8,712	14,531
July	19,705	6,162	13,543
August	22,791	8,390	14,401
September	27,555	11,447	16,108
October	37,476	19,425	18,051
November	46,405	23,478	22,927
December	36,072	17,245	18,827
Total	356,486	146,522	209,964
1922			
January	40,968	22,913	18,055
February	44,238	21,582	22,656
March	56,660	27,677	28,983
April	84,419	51,065	33,354
May	88,006	48,225	39,781
June	100,515	57,180	43,335
July	77,775	38,550	39,225
August	75,708	28,339	47,369
September	110,087	63,196	46,891
October	90,768	43,277	47,491
November	74,367	29,470	44,897
December	82,499	35,209	47,290
Total	926,010	466,683	459,327
1923			
January	117,116	57,016	60,100
February	103,874	46,271	57,603
March	163,280	87,675	75,605
April	109,772	49,955	59,817
May	108,908	48,871	60,037
June	102,046	50,507	51,539
July	65,637	22,505	43,132
August	67,448	27,641	39,807
September	63,383	30,566	32,817
October	54,897	19,645	35,252
November	55,224	21,193	34,031
December	53,894	21,972	31,922
Total	1,065,479	483,817	581,662
1924			
January	64,218	26,649	37,569
February	85,885	42,103	43,782
March	115,420	68,646	46,774
April	84,894	43,833	41,061
May	73,110	38,128	34,982
June	61,860	33,667	28,193
July	49,814	22,511	27,303
August	46,663	19,923	26,740
September	72,940	34,814	38,126
October	79,537	37,898	41,639
November	87,058	48,960	38,093
December	111,774	62,401	49,373
Total	933,173	479,533	453,640
1925			
January	98,703	49,681	49,022
February	76,514	35,356	41,158
March	75,537	29,789	45,748
3 months.	250,754	114,826	135,928
April	74,541	29,861	44,680
May	63,827	22,817	41,010
June	62,700	23,301	39,399
July	67,881	26,387	41,494
August	63,606	23,130	40,476
September	59,326	20,738	38,588
October	74,283	26,434	47,849
November	83,197	38,485	44,712
December	100,377	50,654	49,723
Total	900,492	376,633	523,859
1926			
January	106,186	51,557	54,629
February	93,121	41,236	51,885
March	104,467	44,461	60,006
3 months.	303,774	137,254	166,520

Production of Steel Castings

1926	Total	Railroad Specialties	Miscellaneous
January	92,047	37,321	54,726
February	90,917	41,191	49,726
March	107,867	46,571	61,296
3 months.	290,831	125,083	165,748

	Monthly Capacity			Average Monthly Bookings			Per Cent of Capacity		
Year	Total	Railroad	Miscellaneous	Total	Railroad	Miscellaneous	Total	Railroad	Miscellaneous
1913	84,900	36,600	48,300	57,184	27,600	29,584	67	75	61
1914	85,800	36,800	49,000	43,602	21,142	22,460	51	58	46
1915	89,600	40,300	49,300	64,252	29,966	34,286	72	74	70
1916	94,200	40,500	53,700	101,015	54,645	46,370	107	135	86
1917	100,000	41,100	58,900	88,394	34,529	53,865	88	84	92
1918	104,200	41,100	63,100	109,574	48,124	61,450	105	117	97
1919	108,200	41,200	67,000	44,120	13,692	30,428	41	33	45
1920	116,300	46,500	69,800	78,597	33,080	45,517	68	71	65
1921	116,900	46,600	70,300	29,707	12,210	17,497	26	26	25
1922	114,800	49,000	65,800	77,167	38,890	38,277	67	79	58
1923	118,900	52,100	66,800	88,790	40,318	48,472	75	77	73
1924	122,500	55,300	67,200	77,764	39,961	37,803	64	72	56
1925	126,000	57,200	68,800	75,041	31,386	43,655	60	55	64

In This Issue

Sheet Steel Trade Extension Committee plans to erect model steel house on Boardwalk at Atlantic City.—Will demonstrate ways in which sheets may be used in home building.—Page 1219.

Replogle Steel Co., owning four blast furnaces, shuts them down and buys in part foreign pig iron.—Unable to compete with imported product; Tata iron now penetrating the Cleveland district, says F. B. Richards of M. A. Hanna Co.—Page 1218.

Jones & Laughlin place new light weight I-beam on market for use in schools, hospitals, hotels and small homes.—Made in sizes from 6 in. to 12 in. and will serve as floor joists, roof purlins, studding, etc.—Page 1225.

General Motors plant develops chromium plating for automobile parts on quantity production basis.—Method said to cost but little more than nickel plating; new finish harder than nickel, high luster requires no polishing.—Page 1187.

World trade now close to pre-war volume but United States and Canada are only nations that have made substantial increase over pre-war export business. — Raw materials represent less than one-third of total exports, says James A. Farrell, president United States Steel Corporation.—Page 1190.

Changes in machine tool design have caused redesign of gearing and often simplification of types of steel used.—Pratt & Whitney used 24 types of steel for their machines five years ago; now 9 answer same purpose.—Page 1202.

Workers in unionized sheet mills demand stiff increase in wage rates in call for annual conference.—Ask increases of from 5 to 25 per cent over existing rates.—Page 1217.

A. J. M. Sharpe, International Metal Service, London, says outlook for zinc trade is not encouraging.—Until industrial conditions in Germany improve, American smelters must give up hope of exporting other than high grade zinc.—Page 1219.

Engineers discuss formation of an International body for development of industrial standards.—Harmonizing British and American screw thread systems; standardization of gaging methods and limits, mentioned as matters for attention of such a body.—Page 1204.

Sir Richard Glazebrook, British Engineering Standards Association, recommends compromise between British and American standard threads. — New thread would be practically interchangeable with products now threaded with either standard.—Page 1220.

American shipments of steel to Japan in first quarter this year more than double those of same period in 1925.—Would not indicate that rumored boycotting is taking place.—Page 1223.

Claims motor-powered equipment on farms depreciates at rate of 25 *per cent a year.*—George B. Cavert, president Cavert Wire Co., Ellwood City, Pa., says farms are overmechanized; suggests reduction of number of farmers in recent years may mean farmers are forced out of business.—Page 1224.

Sixty jobbing foundries in Los Angeles may submit their cost figures to scientific investigation.—Cooperative action suggested to educate owners in proper methods of cost figuring.—Page 1194.

Says structural engineers must know more facts concerning welding before it is accepted as applicable to building construction.—J. H. Edwards, American Bridge Co., says doubts concerning training and control of individual welder must be eliminated and standard testing methods devised.—Page 1195.

Welded pipe joint said to have many advantages, such as ease of production, comparative cheapness, freedom for design of pipe layouts, saving in insulation. — But every job should be considered as to welding possibilities on own merits, says L. T. Sforzini, Eastman Kodak Co., Rochester.—Page 1197.

Claimed that rejects in heat-treating processes are fewer with electric furnaces. — But gas engineers reply that better record is usually due to better engineering rather than fundamental advantages of electric current as fuel.—Page 1199.

Cheaper ferromanganese believed possible on account of large ore output, which can easily exceed consumption.—In fact, Harriman contract with Soviet Government calls for higher output within five years than total world consumption.—Page 1192.

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THE steel frame house at Tarrytown, N. Y., which was first described in THE IRON AGE of March 18, was officially opened to public inspection on April 25 with impressive ceremonies. Charles M. Schwab presented the key for opening the house to John Carroll Broderick, the inventor, saying that the successful introduction of steel in small house construction might well be compared to the first use of structural steel for large buildings. Bennett Chapple, American Rolling Mills Co., Middletown, Ohio, paid a tribute to the inventor (right) and to A. F. Gilbert, the architect who first erected a house on this system, as well as to THE IRON AGE for its work in developing this new market for steel. Among other speakers was Lieut. Gov. Seymour Lowman, who turned the key which opened the house for a period of six weeks' inspection by the public under the auspices of the New York *Herald Tribune*, which has adopted it as a part of its model home program.

For News Summary See Reverse Side

SHEET MILL WAGE DEMAND

Proposed Union Scale for Jobbing and Tin Mills Calls for Stiff Advance

PITTSBURGH, April 26.—As has been previously intimated, the demands of the Amalgamated Association of Iron, Steel and Tin Workers of North America upon the independent sheet and tin plate companies working under an agreement with that body, to be presented at the annual conference, which will be held in Atlantic City, starting May 24, call for a rather complete and stiffly upward revision of the existing agreement.

Standing out among the demands is one for a change in the preamble of both sheet and jobbing and tin mill scales, calling for a 2 per cent change in the wages of the mill crew for each 5c. per 100 lb. in the average sales price as disclosed by the bimonthly examination of signatory company sales records. Under the present agreement, the men get 1½ per cent of each 5c. advance and lose the same amount for each drop of 5c. in the average sales price. The sliding scale was effective in the 1925-26 rates down to an average sales price of 1.80c. per lb. In the demands to be presented next month, the sliding scale is not effective below a price of 2.15c. per lb.

That roughers, catchers, matchers, and doublers and heater's helpers and pair heaters on sheet and jobbing mills receive an advance of 15 per cent, to be paid by the company, is another interesting demand. One of the most discussed topics among union mill men is the wide variation between the wages of these members of the crew and those holding the more responsible jobs. Bringing lower paid labor more in line with the higher paid hands has been an aim of the union, because it is claimed that it has been the men in the lower positions who have been tempted to go out of union shops and out of the union by the offer of higher ratings in open shop mills.

A demand for a 10 per cent increase is asked for a number of kinds of work, and for rolling pickled iron or steel, there is a demand for 25 per cent extra, against 20 per cent now charged.

A complete scale for the three-part system with mechanical doublers on tin mills has been formulated for presentation at the conference. This is the result of the introduction of the mechanical doubler into union mills. It is a new scale and comparison is not possible.

SUBSIDY FOR JAPANESE STEEL

Recent Act Grants Subsidy on Pig Iron and Exempts New Plants from Profits Tax for 15 Years

WASHINGTON, April 27.—Effective April 10, the Japanese Steel Manufacturing Encouragement Act provides for a subsidy of 6 yen (about $2.70) per ton of molten iron produced from ore for immediate steel production, 5 yen (about $2.25) per ton of pig iron produced for steel manufacture, and 3 yen (about $1.35) per ton of pig iron for other purposes for plants which produce 35,000 tons of pig iron and the same tonnage of steel.

A cable to the Department of Commerce from Acting Commercial Attaché Calder, Tokyo, says that in addition such plants are exempted from the income and business profits taxes and from the import duty on plant machinery and equipment for a period of 15 years. The exemptions apply also to manufacturers of cast steel and wrought steel products producing more than 5250 tons annually and to manufacturers who erect new plants capable of producing crucible steel and electric steel to the amount of 2500 tons annually. A specific subsidy and tariff exemption is provided also to shipbuilders using Japanese steel.

Canadian Tariff Reductions on Tin Plate, Castings, Machinery and Automobiles

WASHINGTON, April 27.—The general duty on tin plate has been reduced from 12½ per cent to 5 per cent ad valorem by budget proposals introduced in the Canadian Parliament on April 15 and put into force provisionally from April 16, according to Trade Commissioner Meekins, Ottawa. The old preferential duty of 7½ per cent on tin plate is eliminated entirely and the product made duty free when produced in the British Empire.

The general duty on iron or steel castings in the rough, not further finished than with the burrs removed, to be used for shot guns, was reduced from 27½ to 10 per cent, while the preferential duty was cut from 15 to 5 per cent. The machinery and parts for producing unrefined oil or fertilizer will be admitted free, as against the old duty of 27½ per cent. A general duty of 10 per cent was placed on engines for aircraft. Heretofore this class of engines was admissible to Canada free of duty and is still free under the preferential classification. On and after July 1, 1928, the general duty will be 27½ per cent, while the preferential duty will be 15 per cent.

The principal automotive changes are reductions in the duty on passenger automobiles (valued at retail at not more than $1,200), motor trucks and motorcycles, from 35 per cent ad valorem to 20 per cent, and on higher-priced passenger cars, from 35 per cent to 27½ per cent, when imported from the United States. Canadian automobile manufacturers will be granted a drawback of 25 per cent of the duty paid on materials imported for use in the manufacture of automobiles, provided at least 50 per cent of the cost of the finished vehicles is produced in Canada.

Heavier Output of Malleable Castings in March

WASHINGTON, April 27.—Production of malleable castings in March totaled 74,520 tons, as against 66,401 tons in February, according to reports received by the Department of Commerce from 139 identical plants, four of which were idle in March. Except for January, with 75,658 tons, the March production was much the largest in more than two years. It compares with 61,209 tons in March, 1925. The first quarter's production was 216,579 tons, against 194,688 tons in the fourth quarter, and 187,728 tons in the first quarter, of 1925.

Shipments in March amounted to 70,193 tons, against 63,422 tons in February. Orders booked were 58,804 tons, against 58,379 tons; monthly capacity, 110,539 tons, against 110,895 tons, and operations 67.4 per cent against 59.9 per cent. The form of the report has been changed to agree as nearly as possible with the department's monthly report on commercial steel castings.

No Increased Freight Charges on Non-Ferrous Products

WASHINGTON, April 27.—The Interstate Commerce Commission has issued a decision holding that proposed increased rates on brass, bronze and copper articles between points in official classification territory are not justified and has ordered the suspended schedules canceled.

Desirability of using the carbon arc for repair of defective castings has been furthered through the development of a water-cooled carbon electrode holder by the Lincoln Electric Co., Cleveland.

The National Machine Tool Builders Association has circularized its membership for immediate action on the simplified practice recommended on die head chasers.

HOW FOREIGN IRON HURTS

Witnesses Before Tariff Commission Tell Effects of Penetration of Imported Product

WASHINGTON, April 27.—Although owning four blast furnaces, three of them modern, all are closed down and his company, instead of selling pig iron, has been purchasing it, some from abroad, because of inability to compete with the imported product, according to testimony given before the Tariff Commission by President Leonard M. Peckitt of the Replogle Steel Co. The tonnage purchased was used in the manufacture of cast iron pipe at the company's Phillipsburg, N. J., plant, which had been erected, Mr. Peckitt said, to absorb the surplus pig iron it produced.

His evidence was submitted in connection with the hearing on Tuesday of last week on the application of Eastern merchant furnace interests for an increase of 50 per cent in the present duty of 75c. per ton on pig iron, under the flexible provision of the tariff act. Pig iron men from all important producing sections of the country, except the far South and Chicago district, appeared at the hearing and testified to what they said was the necessity of increasing the duty. The hearing was opened by a statement from Col. Frank B. Richards of M. A. Hanna Co., speaking for the American Pig Iron Association. All of them said that the 50 per cent increase, amounting to only 37.5c., was small but would be helpful. Protest was especially against imports of iron from India.

Further Legislation Hinted

"An increase of 37.5c. is only the beginning," said Mr. Peckitt. "We shall have to ask for more." His remark was construed to mean that a higher tariff duty will be sought through legislation. He stated that the Replogle company had purchased some iron from India and found that it was good iron but no better than the domestic product. He also said the company bought some iron from Germany three weeks before, at $20.95, delivered at Phillipsburg, a price which Eastern furnaces could not meet.

To learn the extent of penetration of foreign iron, Commissioner Brossard asked Mr. Richards if the Cleveland district had been affected. "Yes, it has," replied Mr. Richards. "Tata iron has gone as far West as Cincinnati." Commissioner Dennis asked Leon Thomas, president Thomas Iron Co., if the pig iron industry in this country were possibly over-built.

Whether Industry Is Over-Built

Mr. Thomas said he thought possibly there had been an over-production. "There is still enough productive capacity to make prices uncomfortably low in the United States," said Mr. Thomas. Mr. Richards, however, pointed out that the per capita consumption of steel in the United States had increased from 100 lb. in 1820 to 800 lb. at present, when there is an ingot capacity of 46,000,000 tons, and said it has been estimated that by 1930 it will be necessary to increase the ingot capacity to 54,000,000 tons. He said he considered this an answer as to whether there has been over-production.

The Buffalo district has been affected both directly and indirectly by imports of pig iron, said W. S. Rogers, Rogers-Brown Iron Co. It has been directly affected, he stated, by the iron that it would have sold into New England, but which was displaced by imported iron. Indirectly, the effect was that the Buffalo district furnaces have had to go farther West to find markets, said Mr. Rogers, and have shipped a little iron to Chicago by water and also some into Indiana. Before the war, he said, the Buffalo district sold little iron west of Buffalo.

Less Buffalo Iron Sold to New England

He said that his company had sold the following percentages of its output to New England: 1919, 17 per cent; 1920, 22 per cent; 1922, 13.2 per cent; 1923, 13.6 per cent; 1924, 14.1 per cent, and 1925, 10.7 per cent. The figures were declared to show the decline in sales in the New England market by reason of iron imported. Mr. Rogers agreed with Mr. Dennis in the statement that possibly the most formidable competition American furnaces will face later will be from France, Belgium and Luxemburg. Mr. Dennis said it seemed to him it might become overwhelming, having in mind the changes coming about in the Alsace-Lorraine area and the reparations Germany has to pay in coal, thus reducing the costs of the recipients.

Ralph H. Sweetser, American Rolling Mill Co., speaking for the Southern Ohio Pig Iron and Coke Association, said that foreign iron has displaced markets of southern Ohio furnaces by reason of eastern furnaces having had to "push in" further west. He said this effect has been quite perceptible also among Lake front furnaces, as well as in Pittsburgh and western Pennsylvania.

Favoring the Importer on Demurrage

John W. Logan, Alan Wood Iron & Steel Co., Philadelphia, told the commission that a careful investigation had failed to find any one willing to pay a premium for foreign iron. He estimated that the proportion of imports of iron in recent years to the total merchant production in the Eastern, Buffalo and Virginia district has been from 9 to 12 per cent, and in the case of foundry iron alone, about 21 per cent. He said foreign iron could be "warehoused" in a car at Philadelphia for 35 days for $12 per car, while if an Eastern producer kept iron loaded that long at the port of Philadelphia the cost would be $150. Mr. Logan was endeavoring to show that the importer is favored in the disposition of his iron. He said he thought that invoice prices of pig iron are indicative of foreign costs. He said it had been estimated that the railroads of the country lost $5,000,000 in 1925 because they were not given the raw materials they would have had to handle for the production of domestic pig iron which was not produced by reason of imports.

New Illinois Iron and Steel Freight Rates Are Suspended

WASHINGTON, April 27.—Rates on iron and steel products in Illinois Freight Association territory, based on the Jones & Laughlin mileage scale which were to become effective April 25, have been ordered suspended by the Interstate Commerce Commission as a result of protests by steel and other interests of Chicago Heights, Ill., and shippers at other affected points.

The order of the commission, made public last Saturday, suspends the rates until Aug. 23, although it is believed that an effort will be made to straighten out the present difficulty so that the Illinois Freight Association territory rates can be made effective by May 29, simultaneously with those to be applied by Central Freight Association territory rates, the scale for the latter applying from Pittsburgh and including one point, outside of Central Freight Association territory, namely Cumberland, Md.

If the situation created by the suspended Illinois Freight Association tariffs is not cleared up by May 29, it is believed that the commission of its own volition will suspend the Central Freight Association territory rates until the proposed adjustment has been passed upon.

Protest was made by the Chicago Heights interests on the ground that that point would be discriminated against in favor of Gary, Ind., by reason of the fact that the Elgin, Joliet & Eastern, and the Indiana Harbor Belt railroads proposed to leave certain rates unchanged, including the single line rate of 3c. and joint line rate of 5c. per 100 lb. from Gary into the Chicago switching district. The rate from Chicago Heights into the Chicago switching district would be increased from 2.5c. to 8c. under the scale.

Among others who protested against the proposed Illinois Freight Association rates were shippers of Burlington and Muscatine, Iowa, who contend they are outside of the territory. The railroad proposed to increase the Chicago-Burlington rate from 15.5c. to 19c.

SHEET STEEL MARKET STABLE

Key Note, Sounded for Program of the Meeting at White Sulphur Springs

The preliminary program for the fourth annual meeting of the Sheet Steel Executives, to be held at Hotel Greenbrier, White Sulphur Springs, W. Va., May 17 to 20, inclusive, has been issued, and the addresses listed converge to the general topic of "Market Stability Through the Use of Trade Information and the Force of Business Development."

Monday, May 17, will be assembly day with a complimentary dinner in the evening to be followed by the presentation of a motion picture and dancing. Business sessions, which will be held each morning, start Tuesday. For that session the following addresses are scheduled:

"The Sheet Steel Industry, How Can Reasonable Market Stability be Effected?" by W. S. Horner, president National Association Sheet and Tin Plate Manufacturers; "The Fraternity of Business," by C. E. Stuart, president Central Steel Co., Massillon, Ohio; "Wastefulness and Extravagance of Duplication in Industry," by Severn P. Ker, president Sharon Steel Hoop Co., Sharon, Pa.; "The Romance of Business," by Thomas D. McCloskey, general counsel National Association Sheet and Tin Plate Manufacturers; and "Some Labor Problems Confronting the Sheet Steel Industry Today," by Charles R. Hook, chairman labor committee of the association.

On Wednesday, the program calls for these addresses: "Awakening Sheet Steel Consciousness in Tomorrow's Men," by C. L. Bailey, field representative, Sheet Steel Trade Extension Committee; "The Sheet Steel Home," by Bennett Chapple, publicity manager, American Rolling Mill Co., Middletown, Ohio; "Creating a Sheet Steel Minded Public," by J. J. Rockwell, vice-president Crosby-Chicago; "The Need For and Value of Cooperation in Trade Extension Effort," by Laurence F. Miller, general manager of sales National Enameling & Stamping Co., Granite City, Ill.; "Measuring Advertising Value," by C. C. Parlin, director of research, Curtis Publishing Co., Philadelphia.

At the closing session on Thursday, "Master Brand Galvanized Sheets—How Use of the Brand May be Further Extended," is the subject of Walter C. Carroll, vice-president Inland Steel Co., Chicago; "The Trade Extension Program from the Members' Standpoint," that of J. L. Grimes, advertising manager Wheeling Steel Corporation, Wheeling, W. Va.; "Market Stability Through Standardization and Classification," Charles O. Hadly, general manager of sales Alan Wood Iron & Steel Co., Philadelphia; "Relation of City Building Codes to Sheet Steel Demand," George L. Bennett, director building trade extension, Sheet Steel Trade Extension Committee; "Converting Interest into Tonnage," Murray Springer, vice-president Crosby-Chicago, and "Optimism or Pessimism—Which?" is to be the topic of a speaker not yet announced.

Golf is scheduled for the afternoons and prizes will be awarded on the evening of the final day of play.

ZINC INSTITUTE MEETS

Convention in St. Louis Stresses Cooperation with Steel Trade in Promoting Use of Galvanized Sheets

A feature of the convention of the American Zinc Institute in St. Louis on April 19 and 20 was a discussion of the activities of the Sheet Steel Trade Extension Committee. The Zinc Institute has been cooperating with the sheet trade in promoting the larger use of galvanized sheets. C. L. Patterson, of Pittsburgh, secretary of the Sheet Steel Trade Extension Committee, told of the work being done by the sheet manufacturers in finding new uses for galvanized and other sheets and in impressing on the public mind the desirability of using sheets to a greater extent.

Model House to Demonstrate Sheets

Mr. Patterson said that the Sheet Steel Trade Extension Committee will erect on the Boardwalk at Atlantic City a model house which will serve as a permanent demonstration of the various ways in which sheets may be used in house construction. In cooperation with the United States Bureau of Standards the committee will also conduct experiments to determine the fire hazard where sheets are used in the construction of private garages on residence property. An effort will be made to determine, for example, how far away from a dwelling a sheet steel garage should be located in order to reduce the fire hazard to a minimum.

The "Master Brand" galvanized sheet, being put out by members of the Sheet Steel Trade Extension Committee, now bears 15 to 30 per cent more zinc than formerly was used, Mr. Patterson pointed out.

Outlook of Zinc Industry

In a report on world-wide conditions in the zinc industry, A. J. M. Sharpe, International Metal Service, London, England, honorary foreign correspondent of the Zinc Institute, pictured the zinc situation somewhat discouragingly from a trade viewpoint, saying that there is nothing in sight to justify expectations of any immediate improvement. British consumption has held up fairly well, but buying there is on a hand-to-mouth basis; in Germany there is a lack of demand, and slab zinc produced in Germany and Poland is being freely offered in the London market. This situation has affected the American market, London dealers having seized the opportunity of selling short in the United States. Present selling prices in Europe, Mr. Sharpe reported, are little, if anything, above current costs of production. He said further:

"Until industrial conditions in Germany are restored and that country is once again able to absorb the Polish and a part of the Belgian output of slab zinc, American smelters must give up hope of exporting other than high grade zinc. Even the shipment of that may dry up as the year grows older, so far as the United States is concerned, because more and more Canadian metal will need to find a home in Europe. Australian shipments are regularly maintained and the Continent itself is producing more 99.9 per cent than hitherto."

World stocks of zinc as of April 1 were estimated by Mr. Sharpe at 36,400 tons, of which 18,600 tons was in the United States.

Corrosion Resistance of Zinc

The Committee on Development of the Industry of the American Zinc Institute, it was announced, will shortly publish a survey on "Corrosion of Zinc," a treatise originally published by a national research association, but withdrawn from print at the request of the institute because of inaccuracies and incompleteness. The book will be put out under the name of the institute and its title will be, "Zinc and Its Corrosion Resistance." It was stated that the material in the book will remove many of the misconceptions now entertained regarding zinc in all its forms.

The institute is cooperating with the American Society for Testing Materials and the American Engineering Standards Committee on specifications for zinc coating of iron and steel. George C. Stone, of the institute, is a member of the sectional committee at work on this question, the committee being made up of 50 of the foremost producers and consumers of galvanized material. Progress is being made toward the promulgation of American zinc coating standards.

Other time at the convention was devoted mostly to the presentation of technical papers, among which were the following: "Flotation in Tri-State District, 1925," by C. O. Anderson, United States Bureau of Mines; "Metallurgical Recovery of Zinc," by C. E. Siebenthal, United States Geological Survey; "Recent Experiments in the Electrothermic Metallurgy of Zinc," by Dr. Charles H. Fulton, director School of Mines and Metallurgy, Rollo, Mo.; "Mining and Metallurgical Improve-

ments," a round table discussion led by Dr. Dorsey A. Lyon, assistant director United States Bureau of Mines. Edwin A. Scott, publisher of the *Sheet Metal Worker*, New York, discussed "The Attitude of the Sheet Metal Worker Toward Sheet Zinc."

President A. P. Cobb and the other officers of the institute reelected. The secretary's office is at 27 Cedar Street, New York.

Topics to Be Discussed at Cleveland Chemical Equipment Meeting

Several papers of interest to the iron and steel industry will be presented during the technical sessions in connection with the Chemical Equipment Exhibit to be held by the Association of Chemical Equipment Manufacturers in Cleveland, May 10-14. The technical sessions, under the direction of the Associated Technical Societies of Cleveland, will be held at the Hollenden Hotel.

In a session on iron ore, Wednesday, May 12, papers will be presented on "Probable Life of our Merchantable Ores" by M. C. Lake, geologist, M. A. Hanna Co., and on "The Development of New Methods for Iron Ore Treatment" by E. W. Davis, University of Minnesota, School of Mines, Minneapolis. During a corrosion session on the same day papers will be presented on "Electro Deposition of Chromium and Chromium Alloys on Brass and Steel" by Dr. Colin G. Fink, professor of chemical engineering, Columbia University, New York, and on "Alcumite—An Acid Resisting Bronze" by W. M. Corse, 810 Eighteenth Street, Washington.

At a ceramic session, Thursday, a paper on "Refractories as Adapted to the Ceramic Industry" will be presented by H. E. Ebright, chief engineer, Ferro Enameling Co., Cleveland. In welding and dust sessions, Friday, A. O. Miller, Reeves Brothers, Alliance, Ohio, will discuss "Welding of Large Chemical Equipment."

Modified Screw Thread Proposed At International Conference

A slightly modified screw thread was proposed by Sir Richard Glazebrook, representing the British Engineering Standards Association, in a paper read at the Third International Conference, held at the Engineering Societies Building, New York, April 14. The paper was presented in connection with discussion of the possibility of arriving at a compromise between the British Standard Whitworth (BSW), and American National Standard (ANS) screw thread.

Delegates from 18 national standardizing bodies were present at the conference, which was held under the auspices of the American Engineering Standards Committee. There were two sessions, one of which was a meeting of the British and American delegates, and the other a meeting of all of the delegates attending the conference.

The modified screw thread suggested by Sir Richard Glazebrook, a former director of the National Physical Laboratory of Great Britain, was developed by John E. Sears of the National Physical Laboratory of Great Britain, on the basis of a suggestion by E. H. Ehrman, chief engineer, Standard Screw Co., Chicago, and member of the American sectional committee on screw threads. This screw thread would have an angle of thread of 57½ deg., which lies midway between the 55 deg. angle of the BSW thread and the 60 deg. angle of the ANS thread. Also the truncations of the new thread would be slightly different from those of the two existing national standard systems in question, and the effect of the changes would be that the new thread would be practically interchangeable with products threaded in accordance with the present national standards. In other words there would be no difficulty in mating a bolt threaded in the new way, with a nut either of the BSW or ANS system, and conversely. Evidently it would be necessary to modify the shape of the threading tools in both countries. The practical interchangeability claimed for the new system was demonstrated by means of plugs and rings threaded in accordance with the new system and with the existing national standard system.

The proposal made by Sir Richard Glazebrook was received with interest and discussed by representatives of the several countries attending the conference. With a view to the imminent importance of the problem of standardizing screw threads in an international way, it was considered desirable to have the proposal circulated among the different national standardizing bodies in order that they may study the question more intensively and then possibly take further steps.

Welding Society Elects New Officers

The results of balloting for officers of the American Welding Society were announced during the society's annual meeting reported elsewhere in this issue. F. M. Farmer, chief engineer, Electrical Testing Laboratories, New York, is the new president, and E. M. T. Ryder, Third Avenue Railway System, New York, is senior vice-president. R. L. Browne, district sales manager, Metal & Thermit Corporation, Boston, was elected New York and New England divisional vice-president; A. M. Candy, commercial engineer Westinghouse Electric & Mfg. Co., East Pittsburgh, is the middle eastern divisional vice-president, and Stuart Plumley, managing editor Acetylene Journal Publishing Co., Chicago, is middle western divisional vice-president. Dr. C. A. Adams; H. M. Hobart, General Electric Co., Schenectady; A. E. Gaynor, John A. Roebling's Sons Co., New York, and A. G. Bissell, Westinghouse Electric & Mfg. Co., Pittsburgh, were elected to serve as directors at large.

A local section of the society has been organized at Portland, Ore. The Los Angeles section is being reorganized, and it is planned to form sections in St. Louis, Kansas City and Atlanta, Ga. It is planned to appoint a technical secretary to the society in addition to the present administrative secretary, W. Spraragen, secretary of the American Bureau of Welding, being suggested for the post.

The annual dinner of the society held at the Hotel Astor, Thursday evening, April 22, was well attended. Following short addresses by the incoming and outgoing presidents, a demonstration of the wonders of liquid oxygen was given, this being in turn followed by professional entertainment and dancing.

The afternoon of April 23 was devoted to a visit to the plant of the Metal & Thermit Corporation at Jersey City.

The fall meeting and exposition of the society will be held in Buffalo, Nov. 16, 17, 18 and 19.

To Discuss Machinery Distribution Questions

The American Supply and Machinery Manufacturers' Association and the Southern Supply and Machinery Dealers' Association, whose joint annual convention will take place in St. Louis on May 18, 19 and 20, announce that some of the topics for discussion will be the following: Slogans in business; hand-to-mouth buying; the selling of specialties, and compensating dealers for direct sales.

Sharp Decline in Industrial Stocks of Coal

Industrial stocks of bituminous coal, April 1, are estimated by the National Association of Purchasing Agents at 49,150,000 tons, a drop of nearly 11,000,000 tons from March 1 and of more than 19,000,000 tons from Jan. 1. Industrial consumption during March is estimated at 46,313,000 tons, much the largest figure for several months. It compares with 43,747,000 tons in February, 41,892,000 tons in January, 39,040,000 tons in December and 37,464,000 tons in November. Production of bituminous coal in March amounted to 45,700,000 tons and of anthracite, 8,339,000 tons.

STEEL COMMON 7 PER CENT

Put on Permanent Basis—Earnings of First Quarter $3.89 Per Share

Earnings of the United States Steel Corporation for the first quarter of 1926 amounted to $3.89 per share of common stock, after allowing for dividends on the preferred stock. For the corresponding quarter of 1925 the rate of earnings was $2.93 per share of common stock. Earnings of the fourth quarter of 1925 available for common dividends were $3.39 per share.

The quarter's report was made public Tuesday afternoon, and Chairman Gary announced that following the suggestion of J. Pierpont Morgan, the finance committee unanimously voted to put the common stock of the corporation on a 7 per cent basis. Heretofore the common stock has been regarded as a 5 per cent stock, though there had been ten consecutive dividends which gave it total dividends equivalent to 7 per cent per annum. In passing, Judge Gary reminded his hearers that the present preferred dividend disbursement will be the hundredth.

Earnings before making deductions for depletion and depreciation and for sinking fund and other charges amounted to $45,061,285, or 13 per cent more than the corresponding total a year ago. The net income, $30,743,570, was 18 per cent ahead of that of the first quarter of last year; the balance available for dividends, $26,074,957, was 23 per cent more than that a year ago, and the surplus for the quarter, $10,874,745, compares with $6,005,079, the surplus of the first quarter of 1925.

The accompanying table gives the earnings for the first quarter and for those of three preceding years:

Quarters	1926	1925	1924	1923
First	$45,061,285	$39,882,992	$50,075,445	$34,780,069
Second	.....	40,624,220	41,381,039	47,858,181
Third	.....	42,400,419	30,718,415	47,053,680
Fourth	.....	42,630,840	30,939,912	49,954,744

EARNINGS FOR FOURTH QUARTER

	Earnings Before Charging Interest on the Subsidiary Companies' Bonds Outstanding	Less: Interest on the Subsidiary Companies' Bonds Outstanding	Balance of Earnings
January, 1925	$14,509,208	$699,059	$13,810,149
February, 1925	15,083,695	698,314	14,385,381
March, 1925	17,562,558	696,803	16,865,755
	$47,155,461	$2,094,176	
Total earnings after deducting all expenses incident to operations, also estimated taxes and interest on bonds of the subsidiary companies			$45,061,285
Less, charges and allowances for depreciation, applied as follows, viz.:			
To depreciation and extraordinary replacement funds and sinking funds on bonds of subsidiary companies		$11,617,578	
To sinking funds on U. S. Steel Corporation bonds		2,700,137	
			14,317,715
Net income			$30,743,570
Deduct: Interest for the quarter on U. S. Steel Corporation bonds outstanding		$4,374,863	
Premium on bonds redeemed		293,750	
			4,668,613
Balance			$26,074,957
Dividends:			
Preferred, 1¾ per cent		$6,304,919	
Common, 1¾ per cent		8,895,293	
			15,200,212
Surplus for the quarter			$10,874,745

Succeeds John Reis as Steel Corporation Vice-President

John Hulst has been elected vice-president of the United States Steel Corporation, succeeding John Reis, who recently resigned. For the past ten years Mr. Hulst has been chief engineer of the corporation and assistant to Vice-President Reis. His career has been one of steady advancement to a high place in steel works engineering. He is a native of the Netherlands, coming to the United States in 1874 at the age of two years. After attending the public schools of Grand Rapids, Mich., he took his college work at the University of Michigan, graduating in mechanical engineering in 1895. For a time he served as draftsman for the Whiting Foundry Equipment Co., Harvey, Ill., and later with the American La France Fire Engine Co., Seneca Falls, N. Y.

JOHN HULST

Mr. Hulst's connection with the steel industry began in 1898 as draftsman for the Ohio Steel Co., Youngstown, Ohio, and later he was at the plant of the South Sharon Steel Co., and at the works of the National Steel Co. at New Castle, Pa. He was appointed chief engineer of the Mingo works of the last-named company at Mingo Junction, Ohio, in 1901. From that year until 1912 he was chief engineer of the Ohio works of the Carnegie Steel Co., at Youngstown, and from 1912 to 1916 he was at Pittsburgh as chief engineer of the Carnegie Steel Co., leaving that position to go to New York as assistant to the vice-president of the Steel Corporation. His connection with the corporation, or with works which became a part of the corporation, extends over a period of 27½ years. As in the case of Mr. Reis, his work will have to do with the planning and carrying out of the new construction programs of the Steel Corporation. All appropriations for extensions, reconstruction and building of new plants will pass through his hands.

Lumber Dealers May Preempt Steel House Business If Fabricators Do Not Act

With the supply of lumber rapidly being depleted and with the cost of wood for construction purposes constantly mounting, steel fabricators in the United States and Canada have a wonderful opportunity to promote the use of steel in residential construction, thereby opening a new and almost limitless market for their product, according to Charles F. Abbott, executive director American Institute of Steel Construction, in addressing a meeting of fabricators in Cincinnati, April 22.

Mr. Abbott emphasized the fact that every retail lumber yard will soon be selling steel lumber to contractors unless fabricators take advantage of their favorable position and themselves push the sale of steel for residential purposes. He pointed out that fabricating plants are well distributed geographically to deliver the finished steel for houses to contractors in their district. In fact, construction work can be so simplified that standard units can be furnished the builders and the matter of erection then would be comparatively easy.

In discussing the movement for the use of steel in houses Mr. Abbott stated that the series of articles on that subject which were published recently in THE IRON AGE have made a profound impression upon architects, contractors and fabricators in all parts of the United States. He displayed a photograph of the third model steel frame home, sponsored by a New York newspaper, to show that steel is growing rapidly in importance as a material to replace wood in the erection of homes.

A well defined movement to push the construction of metal homes is now under way in Los Angeles.

ESTABLISHED 1855

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Commodity Price Trends

WE cannot dismiss the matter of post-war trends, even though it is now seven and a half years since the war. During and after the war it was very generally admitted that a generation, perhaps more, would pass before the consequences would be obliterated by new influences not associated with the war. The fact that readjustment or reconstitution was not visible month by month would not indicate that the process had stopped; possibly the forces would be simply gathering.

One of the items in this connection was the statistical fact that for approximately 30 years after the Napoleonic wars and our war of 1812, also after our Civil War and the Franco-German war, commodity prices in general fell. In justice to the statistics it should be mentioned that after these two periods of decline prices tended upward, and that could not have been in anticipation of the next war.

The fact that commodity prices as a whole have not been declining in the past four years should not be considered proof that a general downward trend has been placed outside the possibilities. Some general influence may have been gathering force, although prevented by a less lasting force from exhibiting itself in the commodity price averages.

The statement just made that there has been no downward trend in the past four years is merely a general one, but is approximately correct. The reaction from the high prices of 1920 had such momentum as to carry the Bureau of Labor index number down to 138 for January, 1922. It got up to 150 in June, 1922, and since then the fluctuations have been quite minor, with no general swing. The lowest was 145 in June, 1924, and the highest 161 early last year. March of this year stood at 151.5, a decline from February.

Whatever prices are or whatever trend they show, it is a case of the resultant of many forces, which may be opposed or in the same direction. For a limited period a short time downward force may balance a long time upward force, and vice versa.

In recent trade history there have been two outstanding facts, the smallness of commercial profits relative to the turnover and the largeness of wage rates. The smallness of profits does not argue an upward rebound, when the small profits have occurred in face of a very large demand. The behavior of the steel market in the past six months is unprecedented. There has been record demand and production yet prices have had no distinct advance. The case of steel is not exceptional. Rather it is typical of many lines of activity.

As to wage rates, it appears that they have been held at a high level by unanimous consent, rather than by the working of economic forces. We do not know that such unanimity will continue indefinitely. We do know that circumstances alter cases, and circumstances have been growing impressive. Some employers may conclude that they have grown oppressive.

Expansion in industry, engagement in new enterprises, particularly in building, has been a great upward force in the matter of prices and, of course, of wages. The record of one year, or four years or seven years is not conclusive as to continuance. One can never count on such a movement lasting much longer than it has lasted, and the easy money now observed may as reasonably be taken to suggest that the tendency to expand is now declining as to promise that expansion will be encouraged by it.

A Large Opportunity for Conservation

BACKED by his high standing and his experience as vice-president of a large metallurgical organization, eminently sound advice is offered by Dr. F. M. Becket in his address as retiring president of the American Electrochemical Society. Along with a warning there is constructive suggestion.

Elimination of waste and conservation of matter have been fully discussed recently by men of high attainment. A new angle to conservation is presented in Doctor Becket's address. In commercial metallurgical research there are too many cases in which the technology of the proposed processes is thoroughly studied and, after much expenditure of money and gray matter, it is discovered that the cost factor has been neglected. Millions have been

wasted by postponing or entirely omitting the calculation of this or some other phase, often simple and obvious.

The suggestion offered is of fundamental value not only to metallurgy but to research in any industry. It is possible so to plan an investigation that much effort and money can be saved in the early stages. Based on his own experience, the speaker recommended a schedule as the cure for some of the evils cited. An aid to such a plan would be more attention to the basic principles of cost accounting in our modern technical and engineering courses. Research in pure science would be the gainer indirectly, because much of the effort and money could be more beneficially applied in that direction.

Steel Shipments to Japan Growing

SO much was made a few weeks ago of an assertion that Japan was boycotting American steel that an official denial was made. It is interesting in this connection to note that American shipments of steel to Japan in the first quarter of 1926 amounted to more than twice the tonnage of the first quarter of 1925. The figures are respectively 66,415 and 31,424 tons. As a matter of fact, in four months—December, January, February and March just past—the tonnage of black sheets shipped to Japan was greater than for the first 11 months of 1925.

Except for enormous shipments in December, 1923, and January, 1924, connected with the rebuilding of Tokio and Yokohama after the earthquake of September, 1923, steel sheets shipped to Japan in 1923, 1924 and 1925 were at a much lower rate per month than in the quarter just ended. Omitting those two large months, monthly averages were as follows: 1923, 3764 tons; 1924, 5018 tons; 1925, 3123 tons; 1926, three months, 8707 tons. Curiously enough, sheet shipments to Japan in the nine months ended March 31, at 52,618 tons, were almost precisely the same as for the nine months ended March 31, 1925—52,916 tons.

With rails the conditions are different. Rails usually go in large lots, between lean periods of greater or shorter duration. It happens that a large railroad building program late in 1923, based upon earthquake destruction, resulted in the shipment of 70,023 tons of rails in the six months ended with February, 1924. This is more than three times the total rail tonnage which has gone there in the period of more than two years subsequent to these heavy shipments.

The March shipment of rails to Japan was only 2227 tons, against 10,632 tons in the last month of the big rebuilding shipments. Yet, apart from the 3249 tons of last October, it was the largest monthly total in the interim.

Japan continues to hold second position in the list of foreign buyers of American iron and steel. Canada enjoys advantages of propinquity and a large steel demand with comparatively little home production. Of the nine most important items of steel exports, during the nine months ended March 31, Japan took 105,438 tons, or more than twice as much as Cuba, which stands in third position. In two large items, black sheets and tin plate, Japan leads Canada, the excess tonnage to Japan being in each instance nearly 50 per cent.

Confidence and Trade Activity

BETWEEN the times before the war and recent times there is a marked difference in the underlying spirit of commercial transactions. We used to hear a great deal about "confidence" as the chief determining factor in the volume of business. Of late we have heard very little.

During good times men were in constant fear that something might occur to disturb "confidence" and in bad times there was continued hope that something would occur to "restore confidence." One observation that may be made is that the world war made such an upheaval that there was little room for confidence in anything that was not plainly and clearly measurable, but that would hardly be going to the root of the matter. The same is true of the observation that business transactions as a rule are not made over long periods, as formerly.

In this, however, there is a definite and important difference, which is well illustrated by the case of steel. Long term contracts were the rule, one quarter piling on another until sometimes mills were apparently "sold" and consumers apparently "covered" as to much of their material for even a year ahead. Of late the contracts have run only a short distance ahead and a great deal of business has been done in outright sales and purchases without the medium of contracts.

The observation most likely to be made as to this change is that the steel industry has a larger capacity today, relative to expected requirements, and that the railroads give good and quick service, so that buyers do not need to carry stocks or contract far ahead. The same observation would be made as to other industries.

Actual records of production, however, with the peak rates suggestive of capacity and the average rates indicating actual requirements, hardly bear out the belief that the change in style is due chiefly to the relation of productive capacity or to the functioning of the railroads.

One of the things that came to light during the war was that a great deal of statistical information as to production, capacity, consumption and requirements could be gathered, and since the war there has been a great addition to the amount of knowledge available to business men as to what is going on. Actual facts have been replacing guesses. It might be said that knowledge has taken the place of what used to be called "confidence," and this would be true in a measure, but it should also be said that some of what used to be called "confidence" was really fear, fear on the part of the distributer or consumer that he would be caught short.

As a result of the great change referred to, sharp declines in the volume of trade activity cannot come in the same measure from influences that once controlled so largely. There can be no rush of cancellation of orders or contracts because such documents do not exist in the former volume, and the same is true of liquidation of stocks of commodities, for stocks carried now are markedly light.

The next important change in the volume of commercial activity is likely to come not from a change of view on the part of business men but from a change of conduct on the part of great masses of the people. If the people have been buying too much on the installment plan, some time they will have to decrease the rate. That, in fact, has already been picked out by many observers as the chief uncertainty in the prospect for business.

CORRESPONDENCE

Is the Farmer Suffering from too Much Mechanization of His Business?

To the Editor: In THE IRON AGE of March 25 Arthur Watts, Chicago, quotes from an Australian farm paper in his article on "Corn Farmers and Tractors." The Australian writer starts out by saying that the people in the country have the same right to labor saving machines and motor cars as the people in the cities and as much right to have electric lights as tallow candles. There can be no argument as to what a state of society should be or what people should have regardless of where located. In fact, if we were to do any classifying along socialistic lines we should perhaps demand steam yachts for every one. Of course this would mean building canals at the expense of the taxpayers so that we could use the yachts; but then again we have to build special roads to make automobiling possible.

The statement is made that the few horse-drawn vehicles on the city streets are interfering with the free movement of traffic. The best authority we know of on city traffic is Major Elihu Church, engineer New York Port Authority, who states that 73 out of every 100 trucks handling from the railroads and steamship piers on Manhattan Island are horse-drawn, and that the cause of traffic congestion on the streets is merely too much traffic for the streets.

Farm Has Not the Sameness of the Shop

Referring to drudgery on the farm: The writer of this article was a farmer before he was a manufacturer; he contends that there is no more drudgery on the farm than in the factory. What makes work drudgery is the repetition or sameness, which is quite likely to be the case in factory work. On the farm there is a new problem to solve every day; you can see what you are accomplishing. If you like the work, or rather like to accomplish something, there is no other vocation in the world that will satisfy the desire to do something, create something, or produce something.

Any work is drudgery if you don't like it; no work is hard if you do. However, in regard to all this, you drive a tractor all day and see if you are not a great deal more tired at night than you would be driving a three, four or five-horse team to do the same work. An argument in favor of less work on the farm will apply to any other industry, the result being higher costs on the farm or in the mills, and the public itself has to pay the increase. In this connection let me suggest that there is one thing the public does not seem to take into consideration, and that is that the producer and the consumer are practically one; that when you increase the cost of an article you pay for it yourself, and this applies to Mr. Farmer and Mr. Mill Man just the same.

The statement that 100 days will cover all the necessity for power on the farm is based on theory pure and simple. The fact is that you are using power on the farm every day of the year, or should be, just the same as in industry. To make a success of farming and to make a success of manufacturing the same procedure is necessary. That means attending to business every day in the year, cutting out waste, keeping costs down as low as possible, and finding or creating a market for the product whether of the farm or factory.

Is the Farm Over-Mechanized?

There is an old saying that for any country to be truly prosperous its farming interests must be prosperous. The reports we get indicate that this industry is far from being in a favorable state. A year's survey conducted by the National Industrial Conference Board, supported by manufacturing, mining, transportation and public utility interests, shows that since 1910 there has been an increase in the cost of farming of approximately 600 per cent, and an increase of 1000 per cent in farm failures. There must be a reason for this, and possibly the answer is too much overhead by motorization. Anyhow, we find that the most successful farming is done without the use of tractors as farming units.

To illustrate, we will take the largest diversified farm in the United States, Ranch 101, Bliss, Okla., operated by Miller Brothers. This is what Z. T. Miller says: "We keep a very close account of costs and find that as between the tractor and the mule it figures out three to one in favor of the mule." He adds that when it comes down to actual facts in dollars and cents, any farmer who disposes of his horses or mules and intends to do all of his farm work with the tractor will eventually hit the rocks, as he is working for the man who sells the tractor—as soon as he has made enough to pay for one it will be necessary to buy another, etc.

This is what the largest user of farm power in the country has to say. We can refer to a thousand and one others who report similar experiences.

Motor and Horse-Drawn Trucks

We will take the truck. The largest user of trucks in this country that we know of is the United States Distributing Corporation, New York, Harry N. Taylor, president. He made this statement a short time since: "I am going to get at the key of this talk right here. It costs us 6c. a minute to keep a big motor truck on the streets of New York. That covers the cost of the investment, the depreciation, care and upkeep of the truck and everything pertaining to it. It costs us a shade less than 2c. a minute to keep a big two-horse truck on the street. That two-horse truck will haul from five to seven tons, according to the commodities we are hauling. The motor truck will haul practically the same."

We might say in addition to the foregoing that this concern has the contract for the handling of all parcel post in New York; that is it furnishes the horses, drivers and wagons, while Uncle Sam furnishes the mail carriers.

There is another thing that the farmer seems to overlook, and that is that the horse is a consumer of the products of the farm. Thus the power used on the farm can be a by-product of that farm, whereas in the case of an investment in motor power the depreciation is approximately 25 per cent per annum. Still another item in favor of the horse is that the fertilizer of the animal on the farm keeps the farm up. Commercial fertilizer will not, unless used in such amount from year to year as to absorb the earnings of the farm. The estimate we have here is that on an average $40 worth of fertilizer goes back to the farm for every horse employed.

The Farmer's Automobile

Now, we will take the automobile. This is not a farm implement. It is an overhead pure and simple—very nice to have, like the piano, the radio, the talking machine, etc. But the question is whether the farming

business as a whole will support too many such luxuries. In fact, it is questionable if all of us in our various spheres are not diverting more of our incomes and earning powers to luxuries than we should for our own present and future interest.

An International News Service article a few days since reported a statement by the Bureau of Industrial Technology, giving results of a survey by the National Automobile Chamber of Commerce, which showed that the production of automobiles is now at the rate of 4,000,000 a year. The average retail value with accessories is $1,000 a car. The last annual registration of automobiles was approximately 20,000,000. Also the above bureau states that it costs the average automobile owner somewhat over $700 a year to own and operate a car. If this is the case, every man, woman and child in the nation is contributing to this industry approximately $117 each, the total outlay, exclusive of roads or road building, being approximately $14,293,000,000. Another survey, conducted by the National Industrial Conference Board, supported by transportation, mining, public utility interests, etc., shows that the average income of the farmers of the country is $730. Thus, if the farmer paid his share of the automobile expense he would have about $30 left to carry on with.

Another report from the National Automobile Chamber of Commerce, dated March 12, 1926, is that motor fatalities in 1925 were 10 per cent in excess of those for 1924. The figures that we have for 1924 are 19,000 people killed and 450,000 injured on the highways of the United States, 5700 of the dead being children. This would indicate for 1925 about 21,000 people killed and about 495,000 people injured, a casualty list more than twice what we suffered during the 18 months we were involved in the world war. If war represents an economic waste, what does this represent?

Mechanical Progress and Cost Reduction

It is the general impression that the vast strides in improvement of machinery have reduced costs; but the fact is that there is hardly an article manufactured that does not cost two or three times as much to produce today as it did in 1914. The increase in mechanical cost perhaps is not quite so much as the increase on the farm but it is enough to call attention to the fact that mechanical progress does not always represent economical progress. In fact, we do not believe that machinery will ever take the place of efficient man power.

To illustrate from the bricklayer's trade: In 1914 the average number of bricks laid was 2100 and the bricklayer got 65c. an hour. Today the average number of bricks laid is between 400 and 500 and the bricklayer gets $1.50 an hour. Now, it is not the difference between 65c. and $1.50 that has so added to the cost of building, but the difference between the efficiency of the man in 1914 and that of the same man today. Somebody has got to pay for this wastage, and that somebody is the general public; and this applies all along the line.

High Cost of Truck and Tractor Operation

The conclusion that we have really reached in reference to this motorization problem, figuring from all angles, is that when you buy a pleasure car it is a liability pure and simple, and that whatever your business is it has got to earn enough to support it. Also, when you buy a truck you have bought a liability, as you can do the same work more cheaply with the horse than you can with the motor truck. It cannot compete with the horse on the short haul nor with the railroads on the long haul.

When you buy a tractor you have bought another liability, as the same work can be done with the horse for less money and with no more labor. In addition, your horse is a product of the farm and is a consumer of the products of the farm. For farming to be successful in any of its branches it necessarily must have a market for what it has to sell, just the same as any of the rest of us in business. Destroy our market for whatever we produce and we have got to go out of business, and that is what the farmer is doing today—he is going out of business because motorization has destroyed the market for such a large percent of his products.

The Farmer's Overhead Too Much

The last report from the Department of Agriculture stated that there had been a reduction in farmers on farms in the United States during 1925 of 500,000 from the number in 1924. So it behooves those of us who are interested in the prosperity of the farm to work with the farmer in our own interest to make his business a success.

The trouble with farming today is that Mr. Farmer has added too much of an overhead for his business. There is only one kind of power that he should use on the farm and that is the power he can produce on the farm in the way of horses or mules, which are also consumers of the products of the farm. Also, he should devote more time in creating a market for the commodities he produces and is dependent upon for his livelihood. I might also suggest to the consumers in our towns, villages, boroughs and cities that if they will demand a little less high speed service in the matter of distribution of the necessities of life they will do their part in narrowing that great big spread that now exists between what the producer realizes and the consumer has to pay. This is an economic problem that has got to be solved at no distant date or we shall all find ourselves in the position of the small boy waiting for the core of the apple after being warned that there would be no core.

GEORGE B. CAVERT,
President Cavert Wire Co.
Ellwood City, Pa., April 20.

NEW LIGHT BEAMS

Introduced by Jones & Laughlin Steel Corporation to Supplant Wood

Announcement has been made of the perfection of a new rolled steel structural section by the Jones & Laughlin Steel Corporation, Pittsburgh. It is a thin web beam, known as the "J & L Junior," which can be used not only for floor and roof construction in buildings such as schools, hospitals, hotels, office buildings and structures with similar load-carrying requirements, but can actually be utilized for framing structures as small as residences. It is certain to interest architects, engineers and builders in general. It seems to presage the approach of the "all-steel" house as a matter of every day fact, and is expected by the producers to be an immediate and active competitor of wood and concrete for construction purposes and to produce a revolutionary effect upon building practices. From the layman's standpoint, it is claimed that the new section makes possible a practically "indestructible" type of structure, capable of resisting fires, winds and earth tremors, and bringing with itself lower insurance rates and longer life for the building in which it is employed.

This new section is an I-beam, but it is of a lighter weight for its size and of greater strength for its weight than has ever before been produced.

The new section is now being made in sizes from 6 in. to 12 in. and will serve particularly for floor joists, roof purlins, studding and other uses in building construction hitherto occupied almost exclusively by lumber. It is rolled from billets to manufacturers' standard specifications for structural steel. The accompanying table gives dimensions of the beams, but further details will have to be left for publication in a later issue.

SIZES AND WEIGHTS OF J. & L. JUNIOR STRUCTURAL SECTIONS

Depth, in.	Flange width, in.	Web thickness, in.	Area, sq. in.	Weight, lb. per ft.	Moment of inertia	Section modulus
12	2.925	0.165	3.14	10.73	64.02	10.67
11	2.735	0.155	2.74	9.37	47.42	8.62
10	2.545	0.145	2.37	8.11	34.24	6.85
9	2.355	0.135	2.03	6.93	23.99	5.33
8	2.165	0.125	1.71	5.84	16.20	4.05
7	1.975	0.115	1.42	4.85	10.45	2.99
6	1.785	0.105	1.15	3.94	6.36	2.12

Iron and Steel Markets

No Marked Decline in Consumption

Leading Independent Has 77 Per Cent Bookings in April—Favorable Comparison With a Year Ago—Heavy Melting Steel Scrap Still Lower

APRIL is ending with the rate of steel mill operations and of incoming new business measurably below those of a month ago, but with no marked change from the conditions of last week. As a whole the industry is probably running at 80 to 85 per cent of capacity, showing that in consumption there has been no abrupt falling off from what it was in March.

Apart from the seasonal inroad being made on rail and tin plate bookings, the gap between incoming business and shipments is less marked than in late April last year, when mill operations were between 70 and 75 per cent.

The Bethlehem Steel Co.'s showing of new orders at 77 per cent of capacity in the first 21 days of April gave rather a better picture of the situation than was presented at the Steel Corporation's annual meeting.

The Steel Corporation's statement for the first quarter, showing earnings of $45,061,000, is in line with the unusual showing made last week by four leading independents. The increase of $2,500,000 over the fourth quarter total was due to larger shipments and higher prices, October and November both having the benefit of Lake Superior ore road earnings.

Prices for bars, plates and shapes have been steady in the main, in the face of declining backlogs for the last two. In sheets, the weakness of the past month persists and the number of mills making the concessions has increased.

Car builders express disappointment over the small volume of railroad equipment buying. The week's inquiries include 1000 steel gondolas for the Atlantic Coast Line and 500 steel underframes for the Southern. At Chicago an unexpected inquiry for 30,000 tons of rails has come from a railroad which bought a like amount in the first quarter. At St. Louis the Chicago, Peoria & St. Louis has asked for 5000 to 6000 tons of 90-lb. rails and nearly 1000 tons of accessories.

An unusually large amount of structural business is pending, particularly in the Central West. The week's total of awards was less than 13,000 tons. A new Boston theater will take 2500 tons.

Fabricated steel sales in March, the highest for the year, bring the first quarter total to 573,400 tons, against 561,200 tons for the first quarter of 1925. Shipments in March were 81 per cent of capacity and the largest since October.

Lake shipbuilding shows new life. A large shipping interest is inquiring for two ore boats that represent 9000 tons of steel, and two freight boats pending for some time are expected to be placed shortly.

Oil country pipe business still shows betterment, and standard pipe has been moving quite freely. Latest line pipe orders are 100 miles of 12¾-in. for the Lone Star Gas Co. and 25 miles of 12¾-in. and 16-in. for the Columbia Gas & Electric Co., Cincinnati. That pipe mills are busier appears from an average operation of 80 per cent.

A Pittsburgh mill will furnish 2500 to 3000 tons of concrete reinforcing bars for an Akron, Ohio, sewage disposal plant. At Philadelphia 1000 tons of foreign bars were sold for an apartment building, the delivered price being 1.85c. South Atlantic States have been larger buyers of bars abroad, rail freights bringing the delivered price of domestic bars well up in these districts.

In pig iron sales the week was probably the smallest of the year. Foundry consumption was well maintained in the first quarter, but April has brought some uncertainty which does not clear up as spring holds back.

In all markets the decline of heavy melting steel scrap has gone 50c. farther, the Pittsburgh price at $16 being now $3 below the high point for the year.

Canadian steel mills are operating at the highest rate for four years, having good orders for rolling stock, rails and track supplies.

Japan has put out rail inquiries for about 10,000 tons, one calling for 2000 tons of 60-lb. and the other for 7660 tons of 65-lb. rails.

The Nippon Oil Co. is placing 57,000 boxes of tin plate and indications are that it will be divided between Welsh and American mills.

Iron and steel exports in March were 169,438 tons, compared with 157,187 tons in the short month preceding. In the first quarter of 1926 exports were 501,210 tons, against 399,461 tons last year, a gain of 25 per cent. In the nine months ended March 31 the gain was 217,000 tons, almost balanced by an increase of 212,000 tons in imports.

Of rolled and finished products, 145,527 tons was exported in March and 25,519 tons imported; the nine months' totals were 1,190,762 tons and 181,932 tons.

Both composite prices of THE IRON AGE remain unchanged, pig iron being $20.46 for the third week, against $20.71 one year ago, and finished steel 2.439c. per lb. for the fifth week, against 2.474c. one year ago. Thus each is 1 to 1½ per cent lower than at the end of April, 1925.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Apr. 27, 1926	Apr. 20, 1926	Mar. 30, 1926	Apr. 28, 1925
No. 2X, Philadelphia‡	$23.26	$23.26	$23.26	$22.26
No. 2, Valley Furnace†	19.00	19.00	20.50	20.00
No. 2, Southern, Cin'ti†	25.69	25.69	25.69	24.05
No. 2, Birmingham, Ala.†	22.00	22.00	22.00	20.00
No. 2 foundry, Chicago*	22.00	22.00	23.00	22.00
Basic, del'd, eastern Pa.	21.75	21.75	21.75	21.00
Basic, Valley furnace	18.50	18.50	20.00	20.00
Valley Bessemer del. P'gh.	21.26	21.26	22.76	22.76
Malleable, Chicago*	22.00	22.00	23.00	22.00
Malleable, Valley	19.00	19.00	20.50	20.50
Gray forge, Pittsburgh	20.26	20.26	21.76	21.26
L. S. charcoal, Chicago	29.04	29.04	29.04	29.04
Ferromanganese, furnace	88.00	88.00	88.00	115.00
Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Light rails at mill	*32.00*	34.00	34.00	39.20
Bess. billets, Pittsburgh	35.00	35.00	35.00	35.50
O.-h. billets, Pittsburgh	35.00	35.00	35.00	35.50
O.-h. sheet bars, P'gh	36.00	36.00	36.00	37.00
Forging billets, base, P'gh.	40.00	40.00	40.00	40.50
O.-h. billets, Phila	40.30	40.30	40.30	41.17
Wire rods, Pittsburgh	45.00	45.00	45.00	46.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	2.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.22
Iron bars, Chicago	2.00	2.00	2.00	2.10
Steel bars, Pittsburgh	2.00	2.00	2.00	2.00
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, New York	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh	1.90	1.90	1.90	2.00
Tank plates, Chicago	2.10	2.10	2.10	2.20
Tank plates, New York	2.24	2.24	2.24	2.34
Beams, Pittsburgh	1.90	1.90	1.90	2.00
Beams, Chicago	2.10	2.10	2.10	2.20
Beams, New York	2.24	2.24	2.24	2.34
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.40

*The average switching charge for delivery to foundies in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Apr. 27, 1926	Apr. 20, 1926	Mar. 30, 1926	Apr. 28, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.25	3.25	3.25	3.30
Sheets, black, No. 28, Chicago dist. mill	*3.35*	3.45	3.45	3.50
Sheets, galv., No. 28, P'gh.	4.50	4.50	4.50	4.40
Sheets, galv., No. 28, Chicago dist. mill	4.70	4.70	4.70	4.60
Sheets, blue, 9 & 10, P'gh.	2.40	2.40	2.50	2.40
Sheets, blue, 9 & 10, Chicago dist. mill	2.60	2.60	2.60	2.50
Wire nails, Pittsburgh	2.65	2.65	2.65	2.75
Wire nails, Chicago dist. mill	2.70	2.70	2.70	2.85
Plain wire, Pittsburgh	2.50	2.50	2.50	2.50
Plain wire, Chicago dist. mill	2.55	2.55	2.55	2.60
Barbed wire, galv., P'gh.	3.35	3.35	3.35	3.45
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.40	3.55
Tin plate, 100 lb. box, P'gh.	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	*$16.00*	$16.50	$17.00	$16.00
Carwheels, Philadelphia	17.50	17.50	17.50	17.50
Heavy steel scrap, P'gh.	*16.00*	16.50	17.00	16.50
Heavy steel scrap, Phila.	*15.50*	16.00	16.50	14.50
Heavy steel scrap, Ch'go	*12.50*	13.00	14.00	14.75
No. 1 cast, Pittsburgh	16.50	16.50	17.00	17.50
No. 1 cast, Philadelphia	17.50	17.50	17.50	17.00
No. 1 cast, Ch'go (net ton)	*16.00*	16.25	17.00	17.00
No. 1 RR. wrot. Phila.	17.50	17.50	17.50	17.50
No. 1 RR. wrot. Ch'go (net)	*12.00*	12.25	13.00	13.00
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$3.00	$3.00	$3.00	$3.00
Foundry coke, prompt	4.00	4.00	4.25	4.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	14.12½	14.12½	14.12½	13.75
Electrolytic copper, refinery	13.75	13.75	13.62½	13.50
Zinc, St. Louis	6.95	6.95	7.10	6.92½
Zinc, New York	7.30	7.30	7.45	7.27½
Lead, St. Louis	**7.40**	7.50	8.00	7.60
Lead, New York	7.85	7.85	8.37½	7.90
Tin (Straits), New York	**63.75**	62.50	62.87½	55.25
Antimony (Asiatic), N. Y.	*17.00*	17.50	19.25	11.25

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Pittsburgh

Buying Notably Steady and Production Well Maintained—Pig Iron Quiet

PITTSBURGH, April 27.—No definite changes are observed in the tendencies of a week ago. Incoming business is reasonably steady as a whole, but aggregates considerably less in volume than completed obligations, and the tendency of productive capacity slowly is downward. We estimate ingot production this week at 75 per cent of capacity for this and nearby districts, but a little more steel than recently is going on the banks, because engagement of finishing mill capacity, outside of possibly the pipe mills, is decreasing.

Movement of the manufactures of steel still reflects unseasonable weather, and until there is improvement in that direction, there cannot be much quickening in the demand for raw materials. There is an unusually large amount of pending structural business, and it is confidently believed that only a few weeks of good weather will go a long way toward correcting the over-supply of automobiles; but bright prospects no longer are the stimulus to buying that they were in the days when the steel mills could not speed up production, as they can today, and when the railroads could not offer the expeditious service they are now capable of furnishing. Consumers are taking full advantage of these conditions and with mill backlogs pretty well reduced, the price situation becomes rather critical.

It is a situation in which small manufacturers, who cannot stand an idle investment for any length of time, will have a good deal to do with the course of the market. Sheet prices are weak and real firmness is lacking in cold rolled strips, but in other products the desire for business has not reached such an acute stage that manufacturers are disposed to shade prices.

There continues to be a very high rate of blast furnace operations in this and nearby districts, but the explanation is found partly in the fact that several of the steel companies are fortifying themselves against suspensions later on. The Carnegie Steel Co., which put on one of its Edgar Thomson furnaces a week ago, has taken off one of that group and now has 41 furnaces active, three of which are on ferromanganese. This change leaves 95 of 127 furnaces in production in this and nearby districts. On a numerical basis, this is approximately a 75 per cent operation, but the majority of the furnaces in blast being of large capacity, production is probably more than 80 per centum.

It is difficult to imagine a quieter market than exists in pig iron. Important consumers are covered for the present quarter and the small users do not appear to have very heavy requirements. The coke market still is easy. Scrap prices continue to sag in the absence of any important consumer demand. Heavy melting steel is off $3 a ton from what it was the beginning of the year.

Pig Iron.—Business is almost at a standstill. Sales are entirely of carload lots and there are not a great many of these, while inquiries are developed only through solicitation. It is not a matter of price, because it is quite possible that if consumers were interested in the market to the extent of asking for prices on a round tonnage, there might be some tendency to open negotiations. The problem is to find the con-

sumers who really need some iron. As a cut in price probably would not create demand, there is not much tendency on the part of producers to take that step. Low phosphorus iron now is available from the Valley at $27.50, but that price looks rather high in comparison with quotations of Eastern furnaces and importers who are making a delivered Pittsburgh price of $26.66 to $27.66.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$18.50
Bessemer	19.50
Gray forge	18.50
No. 2 foundry	19.00
No. 3 foundry	18.50
Malleable	$19.00 to 19.50
Low phosphorus, copper free	27.50

Ferroalloys.—Consumers are specifying satisfactorily against contracts, but new business is very slow. There is no change in prices. The word here about 20 per cent spiegeleisen is that the leading maker cannot definitely promise deliveries against new orders before July 1. Occasionally an unspecified tonnage is available, but new orders for delivery in the present quarter are taken only on the basis that shipment will be made if possible. Prices are given on page 1231.

Semi-Finished Steel.—Not enough interest is being taken in the market to clearly define prices. The downward trend of business in finished forms and in the prices of some of them no doubt will encourage efforts to secure lower-priced billets, slabs and sheet bars, but local makers note no such pressure as yet nor generally much interest either in prices or supplies. They continue to quote recent prices. Quotations on rods and skelp are holding, although there is not much demand. Prices are given on page 1231.

Wire Products.—Mill business is quiet. The movement from jobbers' stocks is sluggish, due to unfavorable weather. Stocks in second hands, having been pretty well built up by March releases, are proving more than ample for all consumptive requirements. New business is checked also by the fact that jobbers and manufacturing consumers are taking full advantage of the large productive capacity and unexcelled railroad service, which permit modest inventories. Prices are steady. They are given on page 1229.

Rails and Track Supplies.—Competition for business in light rails is still sharp and, while sales are reported of billet rails at $34 per gross ton, it is also a fact that $32 has been done on a tonnage of comparatively moderate size. Not much strength is observed in small spike prices, but the market appears to be holding on other track accessories, although demands and specifications are light. Standard rail order books have been thinned by the heavy production and shipments of the past four months. Prices are given on page 1229.

Tubular Goods.—The report about oil country pipe business is still one of betterment and lately standard pipe has been moving quite freely, more particularly to sections where the weather has been favorable to building construction. Line pipe orders still come out from time to time. The latest of importance are one of 100 miles of 12¾ in. for the Lone Star Gas Co., and one of 25 miles of 12¾ in. and 16 in. for the Columbia Gas & Electric Co., Cincinnati. Neither of these orders came to Pittsburgh makers. Pipe mills are somewhat busier than they have been and the average now is about 80 per cent of capacity, with the independents making a slightly better showing than the leading producer, which, contrary to a report in a daily trade paper, is not planning to start up its Wheeling plant. Mill prices of pipe are firm, but there continues to be irregularity in the secondary market. Boiler tube business is fairly good, but prices are no better from the standpoint of producers than they have been. Discounts are given on page 1229.

Sheets.—No appreciable improvement is in evidence and increasing efforts to secure business make impossible much observance of what recently were regarded as the regular market prices. Mills in this district report that price concessions are being made by more producers than was the case recently, but that the cuts have not been any deeper. The ruling prices are 3.25c., base Pittsburgh, for black, 4.50c., base, for galvanized and 2.40c. base, for blue annealed, while on automobile body sheets all makers now are 4.30c., base, (No. 22 gage). Black sheet prices are reported down to 3.10c., base, but usually on barrel stock, which is commonly available at lower prices than sheets for other uses. Mills are producing at from 75 to 80 per cent capacity. Prices are given on page 1229.

Tin Plate.—The market at this time of the year is usually quiet and this year is no exception. Orders for June shipments are on mill books and it is too early for second half business to be coming out, especially in view of the backward spring and the delay in getting the packing crops into the ground. Moreover, container manufacturers at present have rather heavy inventories of both tin plate and cans. It is a time for a fresh survey of the prospect and the can companies are making one. So far as acreage to be utilized is concerned and the carryover of the 1925 pack goes, the prospects are excellent, but the weather cannot be forecast. Bargain prices have helped to move the big packs of peas, corn and tomatoes of last year. There is no indication of a change in the price of tin plate for the last half of the year and it is possible there will be no formal announcement.

Cold-Finished Steel Bars and Shafting.—The automobile parts makers are still ordering out material with marked conservatism and, while some makers report current business to compare favorably with April a year ago, it is generally behind that of last month, because there are no demands from other consuming sources to make good the loss of automobile tonnage. The market still is quotable at 2.50c., base, Pittsburgh, on ordinary tonnages.

Steel and Iron Bars.—Merchant steel bars are moving rather slowly, and while there is a fairly good movement of bars on contracts to cold finished steel bar makers and to bolt and nut manufacturers, total orders and specifications are no tax on the ability of the

THE IRON AGE Composite Prices

Finished Steel

April 27, 1926, 2.439c. Per Lb.

One week ago	2.439c.
One month ago	2.439c.
One year ago	2.474c.
10-year pre-war average	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.,	Jan. 5;	2.424c.,	Feb. 9
1925	2.560c.,	Jan. 6;	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15;	2.460c.,	Oct. 14
1923	2.824c.,	April 24;	2.446c.,	Jan. 2

Pig Iron

April 27, 1926, $20.46 Per Gross Ton

One week ago	$20.46
One month ago	21.38
One year ago	20.71
10-year pre-war average	15.72

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

	High		Low	
1926	$21.54,	Jan. 5;	$20.46,	April 13
1925	22.50,	Jan. 13;	18.96,	July 7
1924	22.88,	Feb. 26;	19.21,	Nov. 3
1923	30.86,	March 20;	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills	2.00c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c.
Del'd New York	2.34c. to 2.44c.
Del'd Cleveland	2.19c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills	2.00c.

Rail Steel

F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	2.00c.

Iron

Common iron, f.o.b. Chicago	2.00c.
Refined iron, f.o.b. P'gh mills	3.00c.
Common iron, del'd Philadelphia	2.22c.
Common iron, del'd New York	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c.
Del'd Philadelphia	2.22c.
Del'd New York	2.24c.
C.i.f. Pacific ports	2.25c. to 2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c. to 2.19c.
Del'd Philadelphia	2.12c. to 2.22c.
Del'd New York	2.24c. to 2.34c.
C.i.f. Pacific ports	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh	2.50c.
All gages, 6 in. and wider, P'gh	2.30c.
All gages, 6 in. and narrower, Chicago	2.60c.
All gages, wider than 6 in., Chicago	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills	2.50c.
Bars, f.o.b. Chicago	2.50c.
Bars, Cleveland	2.55c.
Shafting, ground, f.o.b. mill	*2.70c. to 3.00c.
Strips, f.o.b. Pittsburgh mills	3.75c. to 3.90c.
Strips, f.o.b. Cleveland mills	3.75c.
Strips, delivered Chicago	4.20c.
Strips, f.o.b. Worcester mills	4.05c.

*According to size.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails	$2.65
Galv'd nails, 1-in. and longer	4.65
Galv'd nails, shorter than 1 in.	4.90
Galvanized staples	3.35
Polished staples	3.10
Cement coated nails	2.65

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	$2.50
Annealed fence wire	2.65
Spring wire	3.50
Galv'd wire, No. 9	3.10
Barbed wire, galv'd	3.25
Barbed wire, painted	3.10

Chicago district mill and delivered Chicago prices are $1 per ton above the foregong. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant; Duluth, Minn., mill $2 a ton higher; Anderson, Ind., $1 higher.

Woven Wire Fence

	Base to Retailers Per Net Ton
F.o.b. Pittsburgh	$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.	66.00
F.o.b. Chicago district mills	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh	2.40c. to 2.50c.
Nos. 9 and 10, f.o.b. Ch'go dist. mills	2.60c.
Nos. 9 and 10, del'd Phila'phia	2.82c.

Box Annealed, One Pass Cold Rolled

No. 28, f.o.b. Pittsburgh	3.20c. to 3.35c.
No. 28, f.o.b. Ch'go dist. mill	3.45c.
No. 28, del'd Phila'phia	3.67c.

Galvanized

No. 28, f.o.b. Pittsburgh	4.50c. to 4.60c.
No. 28, f.o.b. Ch'go dist. mills	3.35c. to 3.45c.
No. 28, del'd Philadelphia	4.92c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	3.25c. to 3.35c.
No. 28, f.o.b. Chicago dist. mill	3.45c.

Automobile Body Sheets

No. 22, f.o.b. Pittsburgh	4.30c.

Long Ternes

No. 28, 8-lb. coating, f.o.b. mill	4.85c.

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.60

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)
(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.40
8-lb. coating I.C.	11.70
15-lb. coating I.C.	14.85
20-lb. coating I.C.	$16.20
25-lb. coating I.C.	17.90
30-lb. coating I.C.	19.45
40-lb. coating I.C.	21.65

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers		Base Per 100 Lb.
2100*	(1¼% Nickel, 0.10% to 0.20% Carbon)	$3.20 to $3.25
2300	(3½% Nickel)	4.50
2500	(5% Nickel)	5.70 to 5.80
3100	(Nickel Chromium)	3.50
3200	(Nickel Chromium)	5.00 to 5.25
3300	(Nickel Chromium)	7.00 to 7.25
3400	(Nickel Chromium)	6.25 to 6.50
5100	(Chromium Steel)	3.40 to 3.50
5200*	(Chromium Steel)	7.00 to 7.50
6100	(Chrom. Vanadium bars)	4.30 to 4.40
6100	(Chrom. Vanad. spring steel)	3.80
9250	(Silicon Manganese spring steel)	3.20 to 3.25
	Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.)	4.10 to 4.20
	Nickel Chrome Vanadium (0.50 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.30 to 4.40
	Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)	4.25 to 4.35
	Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)	3.40 to 3.50
	Chromium Molybdenum spring steel (1 — 1.25 Chrom., 0.30 — 0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00
Light (from billets), f.o.b. mill	$32.00 to 34.00
Light (from rail steel), f.o.b. mill	31.00 to 32.00
Light (from billets), f.o.b. Ch'go mill	36.00 to 38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, ⅜ in. and larger	$2.80 to $3.10
Spikes, ½ in. and smaller	2.85 to 3.10
Spikes, boat and barge	3.25
Track bolts, all sizes	4.00 to 4.50
Tie plates, steel	2.25 to 2.35
Angle bars	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+30
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1¼	30	12
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	29	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	¼ to ⅜	+19	+54
¼ to ⅜	47	30½	½	21	7
½	53	42½	¾	28	13
¾	58	47½	1 to 1¼	30	14
1 to 1¼	60	49½			
2 to 3	61	50½			

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	60	3 in.	45
1¼ to 1½ in.	52	3½ to 3½ in.	47
1¾ in.	36	4 in.	58
2 to 2¼ in.	51	4½, 5 and 6 in.	45
2½ to 2¾ in.	39		

Hot Rolled

2 and 2¼ in.	34	3½ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	58
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base	55
Carbon, 0.30% to 0.40%, base	50

Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

mills to supply and 2c., Pittsburgh, to which the mills here are adhering, is strictly a small lot price. Large buyers are drawing against contracts carrying a price of 1.90c. Iron bars are steady, but not very active.

Structural Steel.—Prospective structural steel business is heavy, but actual lettings are not keeping the shops busy or creating real demands upon the mills for plain material. Local mills are firm in their adherence to 1.90c., base Pittsburgh, on large structural shapes, but no longer seem able to get more than that for ordinary tonnages.

Plates.—The feature is the firmness in prices in the face of a demand that does not seriously tax the productive capacity. A good deal of business is in sight for the plate mills for barges, tanks and large outside diameter pipe, but only in the latter direction is much actually being placed. The new oil field in the Texas Panhandle is developing in remarkable fashion and very large tonnages of pipe are moving there, while the prospect is that a good deal of line pipe will be wanted, as gas as well as oil has been discovered. Prices are given on page 1229.

Hot Rolled Flats.—Buying of hoops, bands and strips is entirely on a short term basis, but enough business is coming to the mills to maintain operating schedules fairly well, and there are no deviations from recent quotations of 2.30c., base, for wide and 2.50c., base, for narrow material.

Cold-Rolled Strips.—Makers in this district disclaim having made prices less than 3.75c., Pittsburgh, but it is admitted that this is now the ruling ordinary tonnage price. There is still some business on makers' books carrying 3.90c., but the recent weakness in the West has made necessary some revision of these contracts and sales above 3.75c., base Pittsburgh, usually are of very small lots. The automobile industry generally is not taking out as much cold-rolled strip steel as it did earlier in the year, and one important maker, on account of curtailed production, will be able to go well through this quarter on first quarter purchases. The lack of new buying from this latter source has told on the total business and has been responsible for the recent price weakness.

Bolts, Nuts and Rivets.—Solicitation of orders for bolts and nuts is a little more active than it has been, indicating that manufacturers are not getting business quite so freely as was the case recently. There are, however, no suggestions of lower prices. Rivet prices still are regular and higher quotations refer entirely to small lots. Prices and discounts are given on page 1229.

Coke and Coal.—There is all the spot coke that is wanted and prices still favor the buyer. No difficulty is experienced in buying spot furnace coke at $3 per net ton, at ovens, for the standard brands, and good foundry coke is available at $4 to $4.50. With most of the union coal mines in this district idle, there is still too much coal for the demand and prices are low and easy.

Old Material.—There is still an almost complete lack of interest by consumers in supplies. They will take small lots that dealers may have to sell, but are not placing orders for future delivery. Prices still are inclined lower on almost all grades, with heavy melting steel now quotable at $16 to $16.50, down 50c a ton since a week ago and of $3 a ton from the top prices of the year. Present prices are based entirely on sales of small lots.

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Tank plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.90c.
Black sheets (No. 28 gage)	4.35c.
Galvanized sheets (No. 28 gage)	5.60c.
Blue annealed sheets (No. 10 gage)	3.50c.
Cold-finished shafting and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Spikes, large	3.30c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Bolts, track	4.90c.
Wire, black soft annealed, base per 100 lb.	$3.00
Wire, galvanized soft, base per 100 lb.	3.00
Common wire nails, per keg	3.00
Cement coated nails	3.05

We quote for delivery to consumer's mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel	$16.00 to $16.50
No. 1 cast, cupola size	16.50 to 17.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	18.00 to 18.50
Compressed sheet steel	15.00 to 15.50
Bundled sheets, sides and ends	14.00 to 14.50
Railroad knuckles and couplers	18.00 to 18.50
Railroad coil and leaf springs	18.00 to 18.50
Low phosphorus blooms and billet ends	21.00 to 21.50
Low phosphorus plates and other material	18.50 to 19.00
Low phosphorus punchings	18.50 to 19.00
Steel car axles	22.00 to 22.50
Cast iron wheels	17.00 to 17.50
Rolled steel wheels	18.00 to 18.50
Machine shop turnings	12.00 to 12.50
Short shoveling turnings	12.50 to 13.00
Sheet bar crops	18.50 to 19.00
Heavy steel axle turnings	15.00 to 15.50
Short mixed borings and turnings	12.50 to 13.00
Heavy breakable cast	15.00 to 15.50
Cast iron borings	12.50 to 13.00
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	16.00 to 16.50
Malleable scrap	17.00 to 17.50

REPORTS BUSINESS GOOD

President Campbell of Youngstown Stresses High Cost of Equipment—Officers Reelected

YOUNGSTOWN, OHIO, April 27.—President James A. Campbell informed stockholders of the Youngstown Sheet & Tube Co. at the annual meeting Tuesday morning that business is much better than he expected it to be earlier in the year. Gross tonnage received by the company has shown progressive improvement each month this year and April will approximate 5 per cent better than March. Recent action of the stock market adversely affected general business, including the steel industry, he pointed out, but he thought business and prices were now on a sounder level.

Last year the company authorized $20,000,000 for improvements and extensions, said Mr. Campbell. Of this amount $8,000,000 has already been paid out of earnings and the company has the balance in the banks and Government securities, to pay as it comes due.

Improvements Are Expensive

Mr. Campbell commented on the fact that these expenditures have been made out of current earnings, and it has been unnecessary to do any special financing. Because of the high cost of machinery and construction, he questioned whether the program would have been advisable had it been necessary to borrow money, stating the returns would hardly have warranted the expenditure.

The company's new seamless tube mill at East Youngstown, largest installation of its kind in the country, will be ready for operation by Aug. 1. The first group of eight tin mills in the 24-mill plant at Indiana Harbor, Ind., will be ready for rolling sheets for tin plate production at the same time. The company is endeavoring to round out the finishing capacity of its Chicago district properties, so as to get the full benefit of its steel-making capacity there.

Mr. Campbell commented on the numerous improvements and advances in mill machinery within the past year and a half and said it had often been necessary for the company's engineers to redesign equipment after the original design had been completed, because of improvements effected in the meantime. Changes in coke ovens and blast furnaces have been particularly marked, he pointed out.

New Record in Iron Output

March pig iron production by the company was the largest in its history. The company's stack at Indiana Harbor produced an average of 790 tons of iron per day, on 1680 lb. of coke, at very reasonable cost.

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rolling, 4-in. and over	$35.00
Rolling, 2-in. and smaller	36.00
Forging, ordinary	40.00
Forging, guaranteed	45.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer	$36.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger	$35.00
6 in. x 2 in. and smaller	36.00

Skelp

	Per Lb.
Grooved	1.90c.
Sheared	1.90c.
Universal	1.90c.

Wire Rods

	Per Gross Ton
*Common soft, base	$45.00
Screw stock	$5.00 per ton over base
Carbon 0.20% to 0.40%	2.00 per ton over base
Carbon 0.41% to 0.55%	5.00 per ton over base
Carbon 0.56% to 0.75%	7.50 per ton over base
Carbon over 0.75%	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is $46. Cleveland mill base, $45.

Prices of Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.55
Old range non-Bessemer, 51.50% iron	4.40
Mesabi Bessemer, 51.50% iron	4.40
Mesabi non-Bessemer, 51.50% iron	4.25
High phosphorus, 51.50% iron	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66% iron	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus	45c.
Manganese ore, Brazilian or Indian, nominal	42c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates	$12.00 to $13.00

	Per Ton
Chrome ore, Indian basic, 48% Cr_2O_3, crude, c.i.f. Atlantic seaboard	$22.00 to $23.00

	Per Lb.
Molybdenum ore, 85% concentrates of MoS_2, delivered	55c. to 60c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	$3.00
Foundry, f.o.b. Connellsville prompt	$4.00 to 4.50
Foundry, by-product, Ch'go ovens	9.75
Foundry, by-product, New England, del'd	12.50
Foundry, by-product, Newark or Jersey City, delivered	10.50 to 11.52
Foundry, Birmingham	5.50
Foundry, by-product, St. Louis or Granite City	10.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	$1.40 to $1.90
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Mine run gas coal, f.o.b. Pa. mines	1.90 to 2.10
Steam slack, f.o.b. W. Pa. mines	1.30 to 1.40
Gas slack, f.o.b. W. Pa. mines	1.40 to 1.50

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd	$88.00 to $95.00
Foreign, 80%, Atlantic or Gulf port, duty paid	$88.00 to 110.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$32.00 to $34.00
Domestic, 16 to 19%	31.00 to 33.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%	$85.00
75%	145.00

Per Gross Ton Furnace		Per Gross Ton Furnace	
10%	$42.00	12%	$42.00
11%	42.00	14 to 16%	$45 to 46.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		Per Gross Ton	
10%	$33.00	12%	$37.00
11%	35.00		

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		Per Gross Ton	
6%	$25.50	10%	$31.00
7%	26.50	11%	33.00
8%	27.50	12%	35.00
9%	29.00		

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd	$1.20
Ferrochromium, 4% carbon and up, 60 to 70% Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	$3.25 to $4.00
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton	$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton	$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines	$17.50 to $18.00
No. 2 lump, Illinois and Kentucky mines	$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid,	$17.41 to $18.00
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines	$32.50

Fire Clay

	Per 1000 f.o.b. Works	
	High Duty	Moderate Duty
Pennsylvania	$43.00 to $46.00	$40.00 to $43.00
Maryland	48.00 to 50.00	43.00 to 45.00
New Jersey	55.00 to 75.00	
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	40.00 to 43.00	35.00 to 38.00
Ground fire clay, per ton	6.50 to	7.50

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$40.00
Chicago	49.00
Birmingham	54.00
Silica clay, per ton	$8.00 to 9.00

Magnesite Brick

	Per Net Ton
Standard size, f.o.b. Baltimore and Chester, Pa.	$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00

Chrome Brick

	Per Net Ton
Standard size	$45.00 to $48.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(Less-than-Carload Lots)

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

	Per Cent Off List
Machine bolts, small, rolled threads	60 and 10
Machine bolts, all sizes, cut threads	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10
Carriage bolts, cut threads, all sizes	50 and 10
Eagle carriage bolts	65 and 10
Lag bolts	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.,	45, 10 and 5
Larger and longer sizes	45, 10 and 5
Bolt ends with hot-pressed nuts	50, 10 and 10
Bolt ends with cold-pressed nuts	45, 10 and 5
Hot-pressed nuts, blank and tapped, square,	4.00c. per lb. off list
Hot-pressed nuts, blank or tapped, hexagons,	4.40c. per lb. off list
C.p.c. and t. square or hex. nuts, blank or tapped	4.10c. per lb. off list
Washers*	6.50c. to 6.25c. per lb. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Semi-finished hexagon nuts:	
⅞ in. and smaller, U. S. S.	80, 10 and 5
1 in. and larger, U. S. S.	75, 10 and 5
Small sizes, S. A. E.	80, 10, 10 and 5
S. A. E., ⅝ in. and larger	75, 10, 10 and 5
Stove bolts in packages	80, 10 and 5
Stove bolts in bulk	80, 10, 5 and 2½
Tire bolts	60 and 5

Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

(To jobbers and consumers in large quantities)

	Per 100 Net S.A.E.	U.S.S.		Per 100 Net S.A.E.	U.S.S.
¼-in.	$0.44	$0.44	⅝-in.	$2.35	$2.40
5/16-in.	0.515	0.515	⅞-in.	3.60	3.60
⅜-in.	0.62	0.66	1-in.	5.65	5.80
7/16-in.	0.79	0.90	1⅛-in.	8.90	8.90
½-in.	1.01	1.05	1¼-in.	12.60	13.10
9/16-in.	1.38	1.42	1⅜-in.	18.35	18.35
⅝-in.	1.70	1.78	1½-in.	21.00	21.00

Larger sizes.—Prices on application.

Large Rivets

	Base Per 100 Lb.
F.o.b. Pittsburgh	$2.50 to $2.60
F.o.b. Cleveland	2.70
F.o.b. Chicago	2.75

Small Rivets

	Per Cent Off List
F.o.b. Pittsburgh	70 and 10
F.o.b. Cleveland	70 and 10
F.o.b. Chicago	70 and 10 to 70 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Milled cap screws	80 and 10
Milled standard set screws, case hardened,	80 and 5
Milled headless set screws, cut thread	80
Upset hex. head cap screws, U. S. S. thread,	80, 10 and 10
Upset hex. cap screws, S. A. E. thread,	80, 10 and 10
Upset set screws	80, 10 and 5
Milled studs	70 and 5

Chicago

Steel at 90 Per Cent Gait—Scrap Weaker

CHICAGO, April 27.—Business as a whole in this district is passing through a slack period, which in some respects is accounted for as seasonable. The curtailed operations of farm implement makers is to be expected at this season and yet the demand for such equipment is considerably better now than during the corresponding period for several years. On the other hand the drop in automobile production would not normally come at this time and steel producers are disappointed in the lack of railroad car buying in view of the good railroad earnings and the large movement of freight.

There is practically no change in the price situation of plates, bars and shapes, unless it is that there is a tendency to lean away from the firmness exhibited earlier in the month. Both the leading producer and the foremost independent in the West are said to be maintaining a price of 2.10c., base Chicago district mills, for the general run of business. Competition is waxing keen, however, and price levels are hard to maintain in outlying territories.

Although production is down from the peak of March, it still averages well up to the 90 per cent mark in ingot capacity, and steel producers still find it advisable to operate the same number of blast furnaces as were necessary when records were being broken. It is claimed that no metal is being laid down and this might be interpreted to mean that stocks of some commodities are accumulating.

For the first time in many weeks specifications do not equal shipments. New buying for the week is about equal to that of the previous seven days. Two bright spots are evident in the market, the one being the greater activity in soft steel bars and the other being the business which is now in sight for the construction of oil storage tanks. The demand for structural materials is showing up better than a year ago but there is some apprehension as to the attitude which organized labor will take. Lathers signed a new agreement at the old scale but the plasterers are now demanding a 25c. per hour increase and a 40-hr. week.

The scrap market is considerably weaker, and even with the price cuts made early in the week, there are still indications that the present level will not hold.

Pig Iron.—The Chicago market for Northern iron is steady at $22. There still exists a hesitancy upon the part of buyers to contract far in advance and the bulk of sales is for delivery over the next 30 to 60 days. Technically the market is healthy, stocks in the hands of users being low; and producers, while having well balanced stocks, have not been able to add materially to tonnage on the ground. Active merchant furnaces in this district include two Federal, two Mayville, two Iroquois and one Zenith. In addition to the production from these stacks, some iron is still to be had from a steel mill stack at Indiana Harbor. New sales during the past seven days are in excess of those of the previous week, but there is some doubt that new business will equal the March volume. Figures now available indicate that shipments for the month will approximate those of March. A few spot sales of silvery ferrosilicon 14 to 16 per cent and charcoal iron are noted at current quotations. Repairs, which are more extensive than at first planned, are being made to the Thomas furnace.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$22.00
Northern No. 1 foundry, sil. 2.25 to 2.75	22.50
Malleable, not over 2.25 sil.	22.00
High phosphorus	22.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	$27.01 to 28.01
Southern No. 2 (barge and rail)	26.18 to 27.18
Low phos., sil. 1 to 2 per cent, copper free	31.20 to 31.70
Silvery, sil. 8 per cent	32.29
Ferrosilicon, 14 to 16 per cent	45.79

Ferroalloys.—A few scattered carlots of ferromanganese have been placed at $88, seaboard, or $95.56 delivered. Several carloads of spiegeleisen are reported sold within the week at $34, base, for the 19 to 21 per cent grade. There is no activity in ferrosilicon other than fairly liberal specifications against old contracts.

We quote 80 per cent ferromanganese, $95.56, delivered Chicago; 50 per cent ferrosilicon, $85, delivered; spiegeleisen, 18 to 22 per cent, $41.76, delivered Chicago.

Plates.—The lack of freight car buying is being felt keenly by local mills, which are now relying largely upon sources other than the railroads for plate tonnages. New buying is about equal to that of the previous week, and both new business and specifications are less than current shipments. One bright spot in this market is the interest being shown in tankage projects by oil refiners in the Southwest and West. In addition to new projects which will add to available storage capacity, there is now contemplated a tank farm in California, which will supplant the two 750,000-bbl. reservoirs which were recently destroyed by fire. This involves the construction of 40 to 58 8000-bbl. tanks, requiring 12,000 to 15,000 tons of tank materials. Plate bookings for tanks during the week totaled 5000 tons. Although 2.10c., Chicago mill, is still the quotable price on plates, there is not the degree of firmness which had been maintained up to the middle of April.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Sheets.—The volume of new business is light but shows improvement over the previous week. Users' requirements for blue annealed sheets are well maintained and the Chicago delivered price for this commodity is steady at 2.65c. Producers find that the demand for galvanized sheets is below normal for this time of the year and the Chicago delivered prices of 4.75c., is lacking in the strength shown earlier in the month. Black sheets show the greatest degree of weakness and are quoted at 3.40c. to 3.50c. delivered in Chicago from mills.

Chicago delivered prices from mill are 3.40c. to 3.50c. for No. 28 black; 2.65c. for No. 10 blue annealed; 4.75c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Structural Material.—The week has been quiet in the matter of contracts awarded and at the same time new inquiry continues to come out in good volume. A contract was placed for 1600 tons for a building on Lake Shore Drive and fabricators estimate that there are no less than twelve good sized motion picture theaters in contemplation in Chicago and immediate territory. Mills find that the demand for structural shapes is holding up well and is in excess of this time last year. Fabricators' stocks are said to be low and unbalanced, but mill deliveries are satisfactory and no effort is being made to change the stock situation. The Chicago mill price of 2.10c. is steady.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

Bars.—There is a slight improvement in both new business and specifications for soft steel bars. The Chicago mill price of 2.10c. appears to be holding on smaller tonnages but better than that quotation is being done on sizable lots. Producers estimate that 100,000 tons of bars will be required for the road building program throughout the country for 1926. Alloy steel bar mills have slackened their pace in accordance with the lessened activity of the automotive industry. Prices of this commodity are steady. The iron bar market is quiet and buying is light from all sources except the railroads, which are still taking a fair tonnage. Mills are shipping at a faster rate than specifications are received and rolling schedules are considerably reduced from those of the previous week. The Chicago price of 2c. is holding but does not display the firmness indicated in the middle of April. Unfilled orders of rail steel bars are 30 to 40 per cent greater than during the first week in April. Both new buying and specifications are running ahead of shipments and mills are being pressed to meet delivery schedules. There is a substantial increase in the demand for reinforcing bars and bed manufacturers are more ac-

tive. Shipments of fence posts are in excess of production and makers are having some difficulty in keeping stocks balanced. The Chicago price of rail steel bars is steady at 2c., although there are indications that keen competition is developing in the matter of State highway work in Illinois.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c., base, Chicago; rail steel bars, 2c., base, Chicago.

Sheet Bars.—The demand for this commodity is more active than usual, and local mills have booked better than 3000 tons at $36 per gross ton.

Billets.—The demand for rolling billets, 4 in. and over, is well sustained and bookings for the week total 5000 tons. The price is steady at $35 per gross ton.

Rails and Track Supplies.—Interest in the rail market is again active because of an inquiry for 30,000 tons of standard section rails and 4500 tons of fastenings. These are for delivery through July and August, and the request for figures comes from a railroad which bought 30,000 tons of rails in the first quarter of this year. The Roxana Petroleum Corporation bought 500 tons of rails for track at its new refinery at East Chicago, Ind. Rail mills in this district are operating full and are not satisfying the demands of the railroads. Departments making rail fastenings are not operating up to capacity.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, $36 to $38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c. per lb. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.25c. to 2.35c., mill; angle bars, 2.75c., mill.

Wire Products.—Jobbers continue to buy from hand to mouth, although a slight increase in volume of business is noted from this source since the weather has become more favorable to transportation in country districts. Stocks are low in warehouses and at the mills, and the latter are disinclined to operate at a faster rate than is warranted by current demand. Specifications from the manufacturing trade are still in good volume. Wire nails are quotable at 2.75c., and plain wire at 2.55c., Chicago district mill.

Cold-Rolled Strip.—The Chicago quotation remains at 4.20c., delivered, or 3.90c., base Cleveland. The demand is well maintained when compared to the previous week, and mills are said to be operating at 75 per cent of capacity.

Bolts, Nuts and Rivets.—Specifications for these commodities are being received at an unchanged rate, and prices are steady. Makers' back logs are in the neighborhood of four to five weeks and operations are not over 70 per cent of capacity.

Cast Iron Pipe.—Chicago quotations are steady at $41 to $42, base Birmingham, or $49.20 to $50.20 for 6-in. diameters and over. Large tonnages are not numerous, but makers report a substantial business in small lettings and from private interests. The tendency of deliveries is to advance and total bookings for the week are larger than for the previous seven days. Makers report that they are not being heavily pressed for delivery against some of the large contracts placed during the latter part of 1925.

We quote per net ton, delivered Chicago, as follows: Water pipe, 4-in., $53.20 to $54.20; 6-in. and over, $49.20 to $50.20; Class A and gas pipe, $4.

Reinforcing Bars.—Awards for the week are in good volume and dealers are encouraged over the greater activity shown by many projects which have been hanging fire for several months. The preparation of estimates and the submitting of quotations is taxing bar benders to the limit. Warehouse shipments for the week exceed those of the early part of April and there is every indication that contractors are finding the season far enough advanced so that they can work on fast construction schedules. Road work in Illinois is receiving considerable attention because of the fact that specifications from the Illinois State Engineer's office this year permit the use of rail steel bars. There are indications that this business may bring out some keen competition. The Chicago warehouse price of 2.60c. for billet steel reinforcing bars is holding on the general run of business. Recent lettings and new inquiries are shown on page 1243.

Coke.—This market remains active and Chicago producers continue to operate with all ovens lighted. Quotations are $9.75 per net ton, oven, or $10.25 delivered in the Chicago switching district.

Old Material.—Practically all grades of materials listed are now quoted 25c. to $1 below the prices of a week ago. Heavy melting steel is off 50c. and is quotable at $12.50 to $13. One large user took a small tonnage at the upper figure early in the week, but dealers doubt if that price could again be obtained. The general run of users will not buy more than their immediate requirements and are persistent in their demands for prompt delivery. Rejections are running unusually high, due in part to more rigid inspection by the user but in a greater measure to the report on the part of yard dealers to rid themselves of off grade materials. Yards are fairly well stocked with high priced material and dealers are making strenuous effort to fill orders without drawing on stock; in fact, yards in this district are practically closed down. Rolled steel car wheels are hard to get and in several instances dealers have been forced to fill orders from yards and take the loss. The demand for malleable grades is holding up fairly well and the supply is hardly equal to current consumption. Railroad lists include 6800 tons by the Burlington, 1650 tons by the Pere Marquette, 1250 tons by the St. Paul.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

	Per Gross Ton	
Heavy melting steel	$12.50 to	$13.00
Frogs, switches and guards, cut apart, and miscellaneous rails	14.25 to	14.75
Shoveling steel	12.50 to	12.75
Hydraulic compressed sheets	11.00 to	11.50
Drop forge flashings	9.50 to	10.00
Forged, cast and rolled steel car wheels	17.25 to	17.75
Railroad tires, charging box size	17.50 to	18.00
Railroad leaf springs, cut apart	17.25 to	17.75
Steel couplers and knuckles	16.25 to	16.75
Coil springs	18.00 to	18.50
Low phos. punchings	16.00 to	16.50
Axle turnings	14.00 to	14.50
Relaying rails, 56 to 60 lb.	25.00 to	26.00
Relaying rails, 65 lb. and heavier	26.00 to	31.00
Rerolling rails	15.75 to	16.25
Steel rails, less than 3 ft.	17.00 to	17.50
Iron rails	14.00 to	14.50
Cast iron borings	10.00 to	10.50
Short shoveling turnings	10.00 to	10.50
Machine shop turnings	7.50 to	8.00
Railroad malleable	17.00 to	17.50
Agricultural malleable	16.00 to	16.50
Angle bars, steel	15.25 to	15.75
Cast iron car wheels	16.00 to	16.50
Per Net Ton		
No. 1 machinery cast	16.00 to	16.50
No. 1 railroad cast	15.25 to	15.75
No. 1 agricultural cast	15.25 to	15.75
Stove plate	13.75 to	14.25
Grate bars	12.75 to	13.25
Brake shoes	11.75 to	12.25
Iron angle and splice bars	14.25 to	14.75
Iron arch bars and transoms	19.00 to	19.50
Iron car axles	23.50 to	24.00
Steel car axles	17.00 to	17.50
No. 1 railroad wrought	12.00 to	12.50
No. 2 railroad wrought	11.00 to	11.50
No. 1 busheling	9.75 to	10.25
No. 2 busheling	6.00 to	6.50
Locomotive tires, smooth	15.50 to	16.00
Pipes and flues	9.25 to	9.75

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes	3.10c.
Mild steel bars	3.00c.
Reinforcing bars, billet steel	2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons	3.60c.
Flats and squares	4.10c.
Hoops	4.15c.
Bands	3.65c.
No. 28 black sheets	4.10c.
No. 10 blue annealed sheets	3.50c.
No. 28 galvanized sheets	5.25c.
Standard railroad spikes	3.55c.
Track bolts	4.55c.
Structural rivets	3.50c.
Boiler rivets	3.70c.
	Per Cent Off List
Machine bolts	50 and 5
Carriage bolts	47½
Coach or lag screws	55 and 5
Hot-pressed nuts, square, tapped or blank	3.25c. off per lb.
Hot-pressed nuts, hexagons, tapped or blank	3.75c. off per lb.
No. 8 black annealed wire, per 100 lb.	$3.30
Common wire nails, base, per keg	3.05
Cement coated nails, base per keg	3.05

Cleveland

April Steel Volume Not Much Below March

CLEVELAND, April 27.—In spite of some falling off in business recently, tonnages entered for finished iron and steel by the local sales offices of some of the larger producers in this territory in April will be about the same as in March. Business is holding up to about the volume of the previous week or two, although the demand for plates is less active. The situation in the automotive industry shows no noticeable change. The curtailment in that quarter is reflected in somewhat lighter specifications, and motor car builders are not ordering material very far ahead. The leading maker of alloy steel has specifications to keep its plant operating to capacity through May. Orders from some of the bolt and nut manufacturers are not so heavy as recently. The outlook in the Lake shipbuilding industry shows an improvement. A new inquiry has come from a large shipping interest for two ore boats, each requiring 4500 tons of steel, and two other Lake freight boats that have been pending will probably be placed shortly. Steel bars are firm at 2c. and little attempt is being made to get a higher price for small lots. Shading to 1.80c. was reported recently on plates for attractive tonnages, but the plate market now seems to be back on a firm 1.90c. base. Structural material is firm at 1.90c., with small lots going in some cases at 2c.

Pig Iron.—The pig iron market is quiet. A good many small lots have been sold, but the general attitude of buyers is to await developments in the price situation, as they do not know whether prices will remain where they are or go lower. In meeting the competition of Cleveland furnaces, where the latter have a freight rate advantage, as for example at Akron, Valley furnaces are selling on the basis of $18.50, furnace, for the base grade of foundry iron, but otherwise their quotations remain at $19.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6.01 from Birmingham:

Basic, Valley furnace	$18.50
N'th'n No. 2 fdy., sil. 1.75 to 2.25	20.50
Southern fdy., sil. 1.75 to 2.25...$26.51 to	28.01
Malleable	20.50
Ohio silvery, 8 per cent	30.52
Standard low phos., Valley furnace	27.50

Semi-Finished Steel.—Considerable business in first quarter contracts is still being carried over and there is a total absence of new inquiry. Specifications are light. The market is unchanged at $36, Youngstown, for sheet bars and $35 for billets and slabs.

Sheets.—The demand for sheets continued light, although some of the mills report a slight improvement in orders for auto body and furniture sheets. Few mills are able to accumulate a backlog. There is virtually no change in the price situation. On black sheets 3.25c., Pittsburgh, is the common quotation. Quotations of 2.40c. on blue annealed and 4.50c. on galvanized are rather general. There seems to be more of a disposition among some mills that are holding to the regular quotations to make concession by naming a Youngstown instead of a Pittsburgh basing point.

Strip Steel.—Efforts are being made by leading manufacturers to maintain the 3.75c., Pittsburgh and Cleveland price on cold-rolled strip, and this is regarded as the present market price, although large lot inquiries recently brought out lower quotations. Little test of the market developed during the week, as the only sales reported were for small lots. Production is holding up well, but mills are unable to accumulate a backlog. Hot-rolled strip steel prices are firm, but sales are light and some of the mills need orders.

Reinforcing Bars.—A contract for 2000 tons for a sewage disposal plant in Akron has been placed with the Hardware & Supply Co., Akron, and the steel will be furnished by a Pittsburgh district mill. New inquiry is light and prices are untested. Rail steel bars are quoted at 1.80c., mill.

Fluorspar.—This market is a little firmer. There has been a sale of 1000 tons of gravel fluorspar at $18, f.o.b. mine.

Bolts, Nuts and Rivets.—Demand is holding up fairly well, but is not so heavy as it was a few weeks ago. Prices are firm. Rivet specifications are good against $2.60 contracts. There has been some shading reported at Pittsburgh, but the market seems to be holding firmly here.

Iron Ore.—There have been several small-lot sales of iron ore in the past week and two new inquiries came out, each for 50,000 to 100,000 tons. Schedules on existing contracts indicate that, unless there should be suspensions later, the ore movement this year will about equal that of the 1925 season.

Old Material.—The market has been very slow, and there has not been enough business to test prices. Most of the current buying is being done by dealers to cover on contracts. Prices are unchanged except that cast-iron borings, mixed borings and short turnings, and rails under 3 ft., are each 50c. lower.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$13.50 to $13.75
Rails for rolling	16.75 to 17.00
Rails under 3 ft.	17.00 to 17.50
Low phosphorus melting	16.75 to 17.00
Cast iron borings	10.75 to 11.00
Machine shop turnings	10.25 to 10.50
Mixed borings and short turnings	10.75 to 11.00
Compressed sheet steel	12.75 to 13.00
Railroad wrought	13.75 to 14.25
Railroad malleable	19.50 to 20.00
Light bundled sheet stampings	11.50 to 11.75
Steel axle turnings	13.50 to 14.00
No. 1 cast	16.50 to 17.00
No. 1 busheling	11.00 to 11.25
Drop forge flashings	12.50 to 13.00
Railroad grate bars	13.00 to 13.25
Stove plate	13.00 to 13.25
Pipes and flues	11.50 to 12.00

Philadelphia

Moderate Recession in Volume of Steel Buying—Scrap Market Is Weaker

PHILADELPHIA, April 27.—While there are indications of a decline this month in the volume of buying of finished steel products, the falling off is of moderate proportions. With some companies April bookings will not fall far behind those of March, which in production was a record-breaking month. As has been the case for many weeks, the buying is of a hand-to-mouth character, small lots predominating, and buyers take it for granted that deliveries can be made as quickly as they need them. Rolling mill schedules are not as full as they were a month or two ago and buyers generally get what they want when they want it. This, of course, involves more frequent changing of rolls, which in itself will cut down the tonnage of rolled products. With so many small orders, sales representatives of the mills are not impressed by the volume of buying until they make their totals at the end of a week, and there has been some surprise even among sellers at the steadiness of the demand. In prices the only pronounced weak spot is on sheets, the general market level now being $2 a ton below that recently prevailing. This makes galvanized sheets 4.50c., black sheets, 3.25c. and blue annealed 2.40c., Pittsburgh. These prices were only occasional in this market up to a week or two ago, but now are quoted by most of the mills. Structural shapes also show a little more weakness, but most other products, particularly plates and bars, are firm.

The scrap market has exhibited further evidences of weakness, heavy melting steel being down to $15.50 to $16, and there has been a 50c. drop in other steel mill grades such as turnings and stove plate. The pig iron market is verging on weakness, but there has not been enough buying of importance in the last week to test it.

Pig Iron.—Aside from one sale of 1000 tons of foundry iron for delivery over the remainder of second

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes	3.00c.
Mild steel bars	3.00c.
Cold-finished rounds and hexagons	3.90c.
Cold-finished flats and squares	4.40c.
Hoops and bands	3.65c.
No. 28 black sheets	4.10c.
No. 10 blue annealed sheets	3.25c.
No. 28 galvanized sheets	5.25c.
No. 9 annealed wire, per 100 lb	$3.00
No. 9 galvanized wire, per 100 lb	3.45
Common wire nails, base, per keg	3.00

quarter, there has been no business of importance in pig iron during the week. The lack of inquiry is a matter for comment in the trade, but as the furnaces of this district are pretty well sold up for the quarter the absence of buyers is not yet giving them any concern. The attitude of buyers, as frequently expressed, is that eastern Pennsylvania prices must give way as have prices in other districts except Buffalo, and they are apparently awaiting such a development. Although recent sales of foundry iron have been on the basis of $22, furnace, for No. 2 plain and $22.50 for No. 2 X, some of the sellers are of the opinion that a drop of 50c. or $1 a ton will precede the next buying movement.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$22.76 to $23.63
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.26 to 24.13
East. Pa. No. 1X	23.76 to 24.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic delivered eastern Pa.	21.75 to 22.25
Gray forge	22.00 to 22.50
Malleable	22.50 to 23.00
Standard low phos. (f.o.b. furnace)	22.00 to 23.00
Copper bearing low phos. (f.o.b. furnace)	23.50 to 24.00

Ferroalloys.—The demand for ferromanganese is so light that in reality no market exists. Consumers are well protected on contracts. Prices named range from $88 to $90, furnace, with one interest still holding for $95.

Billets.—No business of sufficient importance to test prices of billets has developed recently. On attractive tonnage concessions would undoubtedly be offered. Nominal prices are $35 for rerolling billets and $40 for forging billets, Pittsburgh basis.

Plates.—Measured by production, the business of Eastern plate mills this month has been very good, comparing favorably with that of March. Shipments are still largely against first quarter contracts, which in many instances were not specified in full until the latter part of March. Although 1.90c., Pittsburgh, remains firm as the current quotation, new business consists mostly of such small lots that the determination of the mills to adhere to 1.90c. has not had a strong test.

Structural Shapes.—While the volume of buying has remained fairly stable, though in small units, one or two mills have become somewhat more aggressive sellers, with the result that there have been further concessions in prices, as yet, however, by no means general. The range of quotations in the Philadelphia district for some time has been the equivalent of 1.80c. to 1.90c., Pittsburgh, but the lower figure has been shaded in the past week at least $1 a ton. A number of sales of punched beams have been made at prices which if figured back to a mill basis would represent liberal concessions.

Bars.—Foreign bars are still figuring largely in transactions along the Atlantic seaboard. As far down the coast as Florida, according to recent investigations by steel men, foreign bars are an important factor. Most of the jobbers are obliged to stock them to meet competition and many of the larger concrete reinforcing jobs take the imported bars. A local importer has sold 1000 tons of deformed bars for a Philadelphia apartment at 1.85c., Philadelphia, duty paid, and inclusive of the extra. Demand upon domestic mills continues fairly even and steady, but there is a preponderance of small orders. Domestic quotations of 2c., Pittsburgh, have been unaffected either by continued importations or the slight falling off in volume.

Sheets.—For some weeks one or two of the smaller sheet mills have been offering concessions of $2 a ton, principally on galvanized and black, for immediate specification. Other mills have met these prices and now the general price level has descended on all grades. Galvanized at 4.50c., black at 3.25c. and blue annealed at 2.40c., Pittsburgh, are easily obtainable.

Imports.—Imports of pig iron in the week ended Saturday were 5193 tons, of which 4196 tons came from England and 997 tons from India. The recent decision of the Treasury Department at Washington to establish a countervailing duty, the exact amount of which is still to be determined, on imports from the Tata Iron & Steel Co. of India, will not affect importations of "Burn" iron from the Indian Iron & Steel Co. of India, as the latter company receives no bounty from the Indian Government. Other imports last week were 1200 tons of chrome ore from Portuguese Africa and 84 tons of barbed wire from Belgium.

Old Material.—There has been a further fall in scrap values, due largely to a plentiful supply. The market range on heavy melting steel is now $15.50 to $16, a drop of 50c. a ton. A leading buyer of machine shop turnings and bundled sheets for open-hearth furnace use is now offering only $13 for these grades, and for stove plate and grate bars offers $13.50. These prices represent a 50c. decline on all four grades. Heavy breakable cast scrap also is lower. Rolled steel wheels and couplers and knuckles are down a half dollar. There is not enough buying in prospect to offer any hope of an early rise in prices, and the general opinion in the trade is that prices will go slightly lower.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	$15.50 to $16.00
Scrap rails	15.50 to 16.00
Steel rails for rolling	17.00 to 17.50
No. 1 low phos., heavy, 0.04 per cent and under	20.00 to 20.50
Couplers and knuckles	18.50 to 19.00
Rolled steel wheels	18.50 to 19.00
Cast iron car wheels	17.50 to 18.00
No. 1 railroad wrought	17.50 to 18.00
No. 1 yard wrought	16.50 to 17.00
No. 1 forge fire	14.50 to 15.00
Bundled sheets (for steel works)	13.00
Mixed borings and turnings (for blast furnace)	12.50 to 13.50
Machine shop turnings (for steel works)	13.00
Heavy axle turnings (or equivalent)	15.00
Cast borings (for steel works and rolling mill)	13.50
Cast borings (for chemical plant)	15.50 to 16.00
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel works)	16.00 to 16.50
Railroad grate bars	13.50
Stove plate (for steel works)	13.50
Wrought iron and soft steel pipes and tubes (new specifications)	15.50 to 16.00
Shafting	21.00 to 22.00
Steel axles	22.50 to 23.00

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, ¾-in. and heavier	2.80c. to 3.00c.
Tank steel plates, ¼-in.	3.00c.
Structural shapes	2.75c. to 2.90c.
Soft steel bars, small shapes and iron bars (except bands)	3.00c.
Round-edge iron	3.50c.
Round-edge steel, iron finished, 1½ x 1½ in.	3.50c.
Round-edge steel, planished	4.30c.
Reinforcing steel bars, square, twisted and deformed	3.00c.
Cold-finished steel, rounds and hexagons	4.00c.
Cold-finished steel, squares and flats	4.50c.
Steel hoops	4.00c. to 4.25c.
Steel bands, No. 12 gage to ¼-in., inclusive	3.75c. to 3.90c.
Spring steel	5.00c.
No. 28 black sheets	4.65c.
No. 10 blue annealed sheets	3.50c.
No. 28 galvanized sheets	5.85c.
Diamond pattern floor plates—	
¼-in.	5.20c.
⅜-in.	5.50c.
Rails	3.20c.
Tool steel	8.50c.
Swedish iron bars	6.00c. to 6.50c.

New York

Buying Aloofness in Pig Iron Not Affecting Prices

NEW YORK, April 27.—Although pig iron buyers are evidently still refraining from purchasing more than immediate requirements, particularly in the Buffalo district, prices continue unchanged. Reports of concessions from the $22 base of eastern Pennsylvania furnaces cannot be confirmed and thus far the $21 quotation of Buffalo producers is apparently unshaken. Foreign iron prices show no change. In addition to the possible 50 per cent increase in duty under the flexible provision of the tariff, importers and buyers of foreign iron point out that should a British coal strike occur, a decided advance in Continental iron prices would not be unlikely. The assessment of a special duty on iron coming from the Tata Iron & Steel Co. in India is not expected to result in any significant curtailment of such imports. In recent months much of the imports have been from the Indian Iron & Steel Co., which, not making steel, is not subsidized by the Indian Government. Among current inquiries is one from the Crane Co., Bridgeport, Conn., for 500 tons of malleable and 500 tons of foundry iron, 3.75 to 4.25 per cent silicon, for prompt shipment. The Richardson & Boynton Co., which originally inquired for 800 tons of foundry for Dover, N. J., and purchased 300 tons from an eastern Pennsylvania furnace, has closed on 200 tons more with the same furnace. It is estimated that a total of 8000 to 9000 tons of iron was bought in this district last week.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.54 from Virginia:

East. Pa. No. 2 fdy., sil. 1.75 to 2.25	$24.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	25.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	25.52
Buffalo fdy., sil. 1.75 to 2.25	25.91
No. 2 Virginia fdy., sil. 1.75 to 2.25	29.54

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.24c. to 3.34c.
Soft Steel bars and small shapes	3.14c. to 3.24c.
Iron bars	3.24c.
Iron bars, Swedish charcoal	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Rounds and hexagons	4.00c.
Flats and squares	4.50c.
Cold-rolled strip, soft and quarter hard	6.25c.
Hoops	4.49c.
Bands	3.99c.
Black sheets (No. 28 gage)	4.50c.
Blue annealed sheets (No. 10 gage)	3.89c.
Galvanized sheets (No. 28 gage)	5.65c.
Long terne sheets (No. 28 gage)	6.35c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galvanized annealed	5.15c.
Tire steel, 1½ x ½ in. and larger	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases	4.50c. and 7.00c.
	Per Cent Off List
Machine bolts, cut thread	40 and 10
Carriage bolts, cut thread	30 and 10
Coach screws	40 and 10
Boiler Tubes—	Per 100 Ft.
Lap welded steel, 2-in.	$17.33
Seamless steel, 2-in.	20.24
Charcoal iron, 2-in.	25.00
Charcoal iron, 4-in.	67.00

Discounts on Welded Pipe

Standard Steel—	Black	Galv.
½-in. butt	46	29
¾-in. butt	51	37
1-in. butt	53	39
2½-6-in. lap	48	35
7 and 8-in. lap	44	17
11 and 12-in. lap	37	12
Wrought Iron—		
½-in. butt	4	+19
¾-in. butt	11	+ 9
1-1½-in. butt	14	+ 6
2-in. lap	5	+14
3-6-in. lap	11	+ 6
7-12-in. lap	3	+16

Tin Plate (14 *x* 20 *In.*)

	Primes	Seconds
Coke, 100-lb. base box	$6.45	$6.20
Charcoal, per box—	A	AAA
IC	$9.70	$12.10
IX	12.00	14.25
IXX	13.90	16.00

Terne Plate (14 *x* 20 *In.*)

IC—20-lb. coating	$10.00 to $11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25

Ferroalloys.—The ferromanganese market is practically dead, there being an absence of even carload and small lots. The recent competitive campaign has evidently absorbed all prospective business for the immediate future. Sales of spiegeleisen are not much better, although the aggregate of carload and small lots has been a few hundred tons the last week. A report to the effect that the leading producer is so well booked that deliveries on new business cannot be made before July 1 is sharply denied and it is stated that new business for prompt delivery can be taken at any time. Specifications on contract for these alloys is heavy.

Warehouse Business.—Purchases from stock are small and prices generally unchanged. Demand for structural material continues in slightly better volume than for other products. Reinforcing bars are quiet and on sales from stock concessions are occasionally granted from the 3.15c. per lb. base. Sales at as low as 3c. per lb. are reported to have been made. The sheet market is moderately active, particularly on galvanized.

Cast Iron Pipe.—Very little municipal inquiry is in evidence, but private purchasing continues in fair volume. Most makers are well sold ahead except on a few sizes, and this is also understood to apply to the position of the French maker, the Pont-à-Mousson works. Prices are evidently quite firm, except for occasional reductions when competition is keen.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, $50.60 to $52.60; 4-in. and 5-in., $55.60 to $57.60; 3-in., $65.60 to $67.60; with $5 additional for Class A and gas pipe.

Finished Steel.—In taking the measure of the present volume of steel buying, some in the trade have perhaps overemphasized the recession this month. Orders are small, but there is a steady flow of them, and the figures are impressive only when made up in totals. There has, of course, been something of a decline this month, but indications are that when the figures are compiled at the end of the month, the falling off from the March rate will not much exceed 10 per cent, if that much. Prices have shown a few weak spots, particularly on sheets, as reported last week and the week before, but most of the other products are holding up well. There are occasional concessions on structural shapes, but plates at 1.90c. and bars at 2c., Pittsburgh, continue fairly firm. In pipe, wire products and tin plate there is no cutting worthy of market consideration. The volume in pipe is very satisfactory. There have been some hold-ups on tin plate due to the late spring, while wire products are very backward. Weakness in cold rolled strip steel is less pronounced in the East than in the Central West. Structural steel lettings are in reduced volume in this section. Car builders express disappointment over the small amount of car buying in prospect.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c. per lb.; plates, 2.24c.; structural shapes, 2.24c. to 2.34c.; bar iron, 2.24c.

Coke.—There is a continued moderate demand for small tonnages of foundry coke to cover immediate needs and contracts for second half are being renewed quite generally on the $5.50 per ton, Connellsville, basis. Furnace grade is quiet. Standard foundry is unchanged at $8.41 to $9.41 per ton, delivered Newark and Jersey City, N. J., districts, $8.53 to $9.53 per ton, delivered northern New Jersey, and $9.29 to $10.29 per ton, delivered New York or Brooklyn. Furnace is quotable at about $9.91, delivered Newark and Jersey City districts, and $7.03, delivered in northern New Jersey. By-product continues at $9.75 to $10.77 per ton, delivered Newark or Jersey City, N. J.

Old Material.—The recent evidence of weakness in prices of all grades of scrap has developed into a downward movement and the market has settled to a lower level. On shipments of No. 1 heavy melting steel still being made to a Coatesville, Pa., consumer, $16 per ton, delivered, is quoted. Borings and turnings, machine shop turnings and cast borings are all down about 50c. per ton, with brokers as a rule offering $13 to $13.25 per ton, delivered either to Phoenixville or Harrisburg, Pa. Stove plate for steel mills is quoted at $13.50 per

ton, delivered eastern Pennsylvania, and prices to foundries are nominal at about $13 per ton, delivered, with no purchasing by local users. Heavy breakable cast scrap is quoted at $16 per ton, delivered, on a freight rate of $3.78 per ton, and with shipments no longer going to a New Jersey consumer with a low freight rate the high price of $14.50 per ton, New York, is not obtainable from brokers. Specification pipe is quoted at $15 to $15.50 per ton, delivered eastern Pennsylvania, a decline in the buying price of 50c. per ton.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard)	$10.00 to $10.50
Heavy melting steel (railroad or equivalent)	11.50 to 12.25
Rails for rolling	12.75 to 13.00
Relaying rails, nominal	23.00 to 24.00
Steel car axles	19.50 to 20.00
Iron car axles	22.50 to 23.00
No. 1 railroad wrought	14.50 to 15.00
Forge fire	10.00 to 10.50
No. 1 yard wrought, long	13.50 to 14.00
Cast borings (steel mill)	9.25 to 9.75
Cast borings (chemical)	12.50 to 13.00
Machine shop turnings	9.25 to 9.75
Mixed borings and turnings	9.25 to 9.75
Iron and steel pipe (1 in. diam., not under 2 ft. long)	11.25 to 11.75
Stove plate (steel mill)	9.75 to 10.25
Stove plate (foundry)	10.50 to 11.00
Locomotive grate bars	10.50 to 11.00
Malleable cast (railroad)	16.00 to 17.00
Cast iron car wheels	13.50 to 14.00
No. 1 heavy breakable cast	12.00 to 12.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$16.50 to $17.00
No. 1 heavy cast (column, building material, etc.), cupola size	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.)	14.00 to 14.50

RAILROAD EQUIPMENT

Atlantic Coast Line Orders 1000 Steel Gondolas —Southern Buys 500 Underframes

Except for 1000 gondolas ordered by the Atlantic Coast Line and 500 steel underframes bought by the Southern, there has been no railroad equipment buying of importance during the week. Items follow in detail:

The Atlantic Coast Line has ordered 1000 steel gondolas from the American Car & Foundry Co.

The Southern Railway has ordered 500 steel underframes for cars from the Tennessee Coal, Iron & Railroad Co.

The Monroe Sand & Gravel Co. has bought 4 air-dump cars from the Koppel Industrial Equipment Co.

The Rock Island is in the market for 200 underframes.

Conditions in Youngstown District

YOUNGSTOWN, April 27.—Orders for rolled steel are numerous, but involve smaller tonnages, and some irregularity in production schedules has resulted. The operating average in the Youngstown district for all classes is 80 per cent. Blast furnace resumptions in April increased the number of active stacks to 29 of the 42 in the district—the highest production rate in several months.

In finished steel, however, schedules fluctuate considerably. This week 108 of 127 sheet and jobbing mills in the Mahoning Valley are scheduled, but some are on a part-time basis. Independent merchant steel bar output has declined to a 70 per cent rate. The Carnegie Steel Co. has also curtailed in steel ingot and merchant bar departments, and in neither instance is capacity at the March rate.

Efforts of consumers to dislodge rolled steel prices are meeting with some success, especially in sheets and strip steel. Prices under 3.25c. on black sheets, base gage, are being accepted by non-integrated producers to fill rolling mill schedules, while full-finished auto body stock has declined to $4.30 per 100 lb. for No. 22 gage. This is a decline of $4 per ton from the $4.50 quotation earlier in the year.

The Gillette Safety Razor Co., Boston, has acquired control of Roth Buchner Co., manufacturer of safety razor blades, and also an Austrian plant, the name of which is withheld.

STRUCTURAL STEEL SALES

First Quarter Bookings Exceed Those of a Year Ago

WASHINGTON, April 24.—The Department of Commerce announces sales of fabricated structural steel for March as 68 per cent of capacity, based on total bookings of 179,405 tons reported by fabricators with a capacity of 263,095 tons per month, as against February bookings of 61 per cent of capacity and 69 per cent a year ago. Shipments of fabricated structural steel in March represented 81 per cent of the capacity of firms reporting this item, as against 63 per cent in February and 73 per cent a year ago.

The following table lists the statistics reported by 204 identical firms (including data in earlier months for 20 additional firms now out of business). For comparative purposes, the percentage figures are used to obtain a computed total for the United States, based on a capacity of 285,000 tons per month in 1923, 293,000 in 1924, and 305,000 in 1925 and 1926.

	Bookings			Shipments
1924	Actual Tonnage	Per Cent of Capacity	Computed Tonnage	Per Cent of Capacity
January	181,931	72	210,960	63
February	185,721	73	213,890	61
March	177,452	70	205,100	65
Total (3 mos.)			629,950	
1925				
January	151,091	57	173,850	58
February	155,609	58	176,900	61
March	183,286	69	210,450	73
Total (3 mos.)			561,200	
April	204,986	76	231,800	76
May	183,823	68	207,400	76
June	229,130	86	262,300	77
July	217,834	81	247,050	82
August	209,752	78	237,900	80
September	216,428	80	244,000	79
October	239,680	89	271,450	88
November	191,170	71	216,550	74
December	[1] 200,498	75	228,750	80
Total			2,708,400	
1926				
January	[2] 160,208	59	179,950	69
February	[3] 163,230	61	186,050	63
March	[4] 179,405	68	207,400	81
Total (3 mos.)			573,400	

[1] Reported by 204 firms with a capacity of 268,220 tons.
[2] Reported by 200 firms with a capacity of 270,180 tons.
[3] Reported by 197 firms with a capacity of 269,660 tons.
[4] Reported by 184 firms with a capacity of 263,095 tons.

Bethlehem Operated at 87.2 Per Cent During First Quarter

For the first quarter of 1926 the Bethlehem Steel Corporation reports income of $11,973,038, compared with $10,543,136 in the preceding quarter and with $10,399,316 in the first quarter of 1925. After deducting interest charges and provision for depletion, depreciation and obsolescence, the net income for the current period becomes $5,865,850, a substantial advance over the $4,272,830 in the last quarter of 1925 and the $4,071,517 for the first quarter of 1925. After paying preferred dividends the surplus remaining for the first quarter of 1926 was $4,177,055, compared with $3,196,960 in the preceding quarter and with $2,995,879 in the first quarter of 1925. These figures are equivalent respectively to $2.66 per share of common stock in the current quarter, $1.77 in the preceding quarter and $1.66 a year ago.

Unfilled orders at end of March were $59,390,376, compared with $70,566,923 on Dec. 31 and with $65,921,289 on March 31, 1925. Operations during the first quarter averaged 87.2 per cent of capacity, compared with 77 per cent during the previous quarter and with 77.5 per cent in the first quarter of 1925. In March 610,775 tons of steel ingots and castings was produced, equalling 96.4 per cent of capacity—the highest rate of operation the corporation ever had.

San Francisco

Price Reductions in Pig Iron and Scrap—Permit on Mokelumne Project Granted

SAN FRANCISCO, April 24 (*By Air Mail*).—Readjustment of freight rates has resulted in a downward revision of pig iron quotations, Utah foundry being quoted now at $26 delivered, San Francisco, or $1 a ton less than formerly. A similar reduction has been made on foreign irons by local importers. Quotations on steel scrap have also dropped about $1 to $1.50 per gross ton. In plates and shapes prices have not been tested to any marked extent, but the apparent firmness of a month ago is lacking. The hesitancy of buyers has been emphasized during the past week by the small number of fresh inquiries in all departments of the market. The Union Oil Co., Los Angeles, is now expected to hold the larger part of its recent inquiry for 23,000 tons of plates in temporary abeyance, and will place only 9000 tons for the present.

The State Division of Water Rights has issued a permit to the East Bay Municipal Utility District, Oakland, Cal., for construction of the $39,000,000 Mokelumne River project. This virtually marks the end of a controversy that has been bitterly fought for more than two years, and means that Oakland and associated East Bay communities will immediately carry out the utility district's plans for tapping the Mokelumne River at Lancha Plana, Cal., 110 miles away, for the purpose of supplying the East Bay cities with 200,000,000 gal. of water daily. Preliminary work has been under way since the 75,000 tons of plates were awarded for the pipe line last fall. The only remaining formality in the case is that of obtaining a permit from the Federal Power Commission, which is expected to be issued in the near future.

Pig Iron.—Quotations on foundry iron have been lowered about $1 a ton, primarily because of freight rate readjustments. Reports that German iron has been sold here at $21 lack confirmation. Local importers quote German foundry iron, silicon 2.75 to 3.25 per cent, at $23 to $23.50, duty paid, f.o.b. cars San Francisco. Indian foundry, silicon 2.75 to 3.25 per cent., is in good demand at $24.50. Local importers profess to be unable to understand Eastern reports that the Treasury Department has decided to impose a countervailing duty on imports of pig iron from India, and Federal officials here have not as yet received instructions on this point from Washington. Current quotations are as follows:

	Per Gross Ton
*Utah basic	$26.00 to $27.00
*Utah foundry, sil. 2.27 to 3.25	26.00 to 27.00
**English foundry, sil. 2.75 to 3.25	25.00
**Indian foundry, sil. 2.75 to 3.25	24.50
**German foundry, sil. 2.75 to 3.25	23.00 to 23.50
**Dutch foundry, sil. 2.75 to 3.25	22.50
**Belgian foundry, sil. 2.75 to 3.25	22.00

Shapes.—Structural shape awards for the week aggregated 1200 tons, and fresh inquiries call for 1650 tons. The largest individual letting, 410 tons, for a State armory roof in San Francisco, was taken by the Schrader Iron Works. The 273 tons for the Rio Hondo Bridge, Los Angeles, was taken by the McClintic-Marshall Co. of California. Bids have closed on 600 tons for the Multnomah Stadium, Portland, Ore., and the Oregon Highway Commission will close bids April 29 on 400 tons of shapes and 239 tons of reinforcing bars for three bridges. The City of Los Angeles will close bids April 27 on 650 tons for a municipal garage. While most of the Eastern mills continue to quote 2.35c., s.i.f. Coast ports on plain material, it is generally conceded that 2.30c. is possible on desirable tonnages.

Plates.—The Union Oil Co., Los Angeles, which came into the market a week ago with an inquiry for 23,000 tons for tank work, apparently intends to hold the larger part of its inquiry in abeyance for a time, as it has indicated that for the present it will construct only twelve 80,000-bbl. tanks, which will require about 3600 tons. The Los Angeles Shipbuilding Co. has taken 190 tons of plates and 50 tons of shapes for a 7000-bbl. oil barge for the Associated Oil Co. The Western Pipe & Steel Co. is low bidder on the 125 tons of light material for a pipe line for the Thermolito Irrigation District, Oroville, Cal. Roseville, Cal., is in the market for 400 tons for a pipe line and the Lemon Grove and Spring Valley Irrigation District, La Mesa, Cal., will close bids May 10 on 1000 tons. Plates are now quotable at 2.25c. to 2.30c. c.i.f. Coast ports.

Bars.—A Pacific Coast mill has taken 297 tons for the Southwest Portland Cement Co., as follows: 142 tons of flat bars, 125 tons of reinforcing bars and 30 tons of high carbon round bars. The Dollar Steamship Co., San Francisco, has come into the market for 100 tons of large rounds for export to Shanghai, China. Local reinforcing bar jobbers are fairly busy, although most of the current lettings call for less than 100 tons of steel. Badt-Falk & Co. has taken 100 tons for the West Portal School, San Francisco, which is the largest local letting of the week. Concrete bar jobbers quote as follows: 2.80c., base per lb. on lots of 250 tons; 2.95c., base per lb. or carload lots, and 3.20c., base, on less-than-carload lots.

Cast Iron Pipe.—No public lettings of 100 tons or over have been made during the past week. The city of Pasadena, Cal., will close bids April 27 on about 1800 tons, and the city of Santa Ana, Cal., will close bids May 3 on 190 tons. Prices are unchanged at $50 to $52 base, water shipment, San Francisco.

Warehouse Business.—Jobbers report satisfactory sales, although demands are not large. Prices are unchanged.

Coke.—Sales are confined to small tonnages. Fresh inquiry is not consistent in either frequency or volume. Prices are steady, local importers quoting as follows:

English beehive, $15 to $16 per ton at incoming dock, and English by-product, $12 to $14; German by-product, $11.50 to $12.

Old Material.—The demand for scrap is weak and prices have receded about $1 to $1.50 per gross ton. Melters are not anticipating future requirements to any marked extent.

Prices for scrap delivered to consumers' yards are as follows:

	Per Gross Ton
No. 1 heavy melting steel	$10.00 to $10.50
Scrap rails, miscellaneous	10.00 to 10.50
Rolled steel wheels	10.00 to 10.50
Couplers and knuckles	10.00 to 10.50
Country mixed scrap	7.00 to 8.00
Mixed borings and turnings	6.00 to 6.50

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes	3.30c.
Mild steel bars and small angles	3.30c.
Small channels and tees, ¾-in. to 2¾-in.	3.90c.
Spring steel, ¼-in. and thicker	6.30c.
No. 28 black sheets	4.75c.
No. 10 blue annealed sheets	3.75c.
No. 28 galvanized sheets	6.00c.
Common wire nails, base per keg	$3.50
Cement coated nails, base per keg	3.00

Quiet Week in Detroit Old Material Market

DETROIT, April 27.—The market on old material has been very quiet, with no sales of any size being recorded during the past week. There is a possibility of some tonnage having been booked without the usual publicity. Offerings for May from some of the producers in the district reflect the curtailment in automobile production during the past month. Prices are the same as quoted a week ago.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$13.25 to $13.75
Borings and short turnings	9.25 to 9.75
Long turnings	8.00 to 8.50
No. 1 machinery cast	17.00 to 18.00
Automobile cast	21.50 to 22.50
Hydraulic compressed	11.00 to 11.75
Stove plate	13.50 to 14.50
No. 1 busheling	11.25 to 11.75
Sheet clippings	7.00 to 7.50
Flashings	10.00 to 10.50

St. Louis

Third Quarter Pig Iron Inquiry Appears —More Rails Wanted

ST. LOUIS, April 27.—The principal sale of the week was of 2500 tons of basic pig iron by the St. Louis Coke & Iron Corporation to an East Side melter. The local maker also sold 300 tons of foundry iron to a machinery manufacturer and 100 tons for immediate shipment to a Peoria concern. The first inquiry for third quarter delivery has been received here; it is for 400 tons of foundry iron for a Kansas City melter. The market continues dull. Melters generally are showing no interest in pig iron because of a slackening of orders and reduction of melt. Prices are nominally unchanged.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, $2.16 freight from Chicago, $4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$23.16 to $24.16
Northern malleable, sil. 1.75 to 2.25	23.16 to 24.16
Basic	23.16 to 24.16
Southern fdy., sil. 1.75 to 2.25	25.42 to 27.42
Granite City iron, sil. 1.75 to 2.25	23.31 to 23.81

Old Material.—Consumers of old material in the district are reported to have sufficient stocks on hand to run them for the next three or four months, and refuse to buy even at the lower prices prevailing this week. Dealers are reducing stocks rather than take on new tonnages. Railroad lists continue heavy, but even these are being neglected by dealers. New lists include: Chicago, Milwaukee & St. Paul, 8500 tons; Chicago, Burlington & Quincy, 6700 tons; Missouri Pacific, 1000 tons; Union Pacific, 2750 tons; Mobile & Ohio, 1600 tons; Texas & Pacific, 1500 tons, and Missouri-Kansas-Texas, 700 tons. In addition there is a Dodge Brothers list of 12,000 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$12.00 to $12.50
Rails for rolling	15.00 to 15.50
Steel rails less than 3 ft.	16.50 to 17.00
Relaying rails, 60 lb. and under	24.00 to 25.00
Relaying rails, 70 lb. and over	30.00 to 31.00
Cast iron car wheels	15.50 to 16.00
Heavy melting steel	12.00 to 12.50
Heavy shoveling steel	12.25 to 12.75
Frogs, switches and guards cut apart	14.00 to 14.50
Railroad springs	16.50 to 17.00
Heavy axle and tire turnings	8.50 to 9.00
No. 1 locomotive tires	16.50 to 17.00
Per Net Ton	
Steel angle bars	12.50 to 13.00
Steel car axles	17.50 to 18.00
Iron car axles	21.50 to 22.00
Wrought iron bars and transoms	18.00 to 18.50
No. 1 railroad wrought	11.00 to 11.50
No. 2 railroad wrought	11.00 to 11.25
Cast iron borings	10.50 to 11.00
No. 1 busheling	11.50 to 12.00
No. 1 railroad cast	14.00 to 14.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	13.50 to 14.00
Machine shop turnings	6.25 to 6.75
Bundled sheets	7.00 to 7.50

Coke.—The demand for domestic coke is keeping up surprisingly well for this time of year. Dealers are now ordering supplies. Foundry coke is also in good demand, and shipments keep up with current production.

Finished Iron and Steel.—The largest railroad inquiry for some time was issued this week by the Chicago, Peoria & St. Louis, which is in the market for 5000 to 6000 tons of 90-lb. A. R. A. rails, 500 or 600 tons of tie plates and about 250 tons of spikes and bolts. Fabricators of structural steel report business is dull, and the reinforcing bar business is in the same condition. Other lines are extremely quiet.

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes	3.35c.
Bars, mild steel or iron	3.15c.
Cold-finished rounds, shafting and screw stock	3.75c.
No. 28 black sheets	4.60c.
No. 10 blue annealed sheets	3.60c.
No. 28 galvanized sheets	5.70c.
Black corrugated sheets	4.65c.
Galvanized corrugated sheets	5.75c.
Structural rivets	3.65c.
Boiler rivets	3.85c.
	Per Cent Off List
Tank rivets, ⅞-in. and smaller	70
Machine bolts	50 and 5
Carriage bolts	47½
Lag screws	55 and 5
Hot-pressed nuts, square, blank or tapped	3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped	3.75c. off per lb.

Birmingham

Pig Iron Consumers Withhold Purchases but Expect Early Betterment

BIRMINGHAM, April 27.—Larger consumers of iron continue holding off from the open market, saying they expect lower quotations. In the meantime the furnace interests are booking a few orders, and the past week showed a little better aggregate than two weeks previous. With a good unfilled tonnage yet on hand, furnace interests are holding firmly. Some of the larger consumers report lagging in their trade but appear confident there will be an early turn for the better. Production is not being disturbed, 13 blast furnaces making foundry iron. The basic iron make may be cut down some by the necessity for repairs at one or two blast furnaces. One of the larger producers of pig iron reported one day the past week numerous sales aggregating 3000 tons, but this was above the average.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$22.00
No. 1 foundry, 2.25 to 2.75 sil.	22.50
Basic	22.00
Charcoal, warm blast	$30.00 to 32.00

Rolled Steel.—With exception of wire and nails, all reports as to the rolled steel market conditions are favorable, the smaller structural fabricating shops working to capacity and other shops on plate, sheet and other shapes also being active. Much steel is moving from the district. Rerolled reinforced concrete bars are in good demand and plenty of this stock is obtainable. Export movements down the Warrior River of steel, rails and bars, are still noted. Steel bars show no change in price, 2.15c. to 2.25c. base, Birmingham, tank plates, 2.05c. to 2.15c. and structural shapes at 2.05c. to 2.15c. Local use of structural steel is active.

Cast Iron Pipe.—Production and delivery of cast iron pressure pipe are active, but inquiries continue to lag. Confidence is expressed that there will be warrant for steady operation of the several shops in this immediate territory through the remainder of year, despite the fact that lettings recently have not been so voluminous as previously.

Coke.—Demand warrants steady operation and shipments are good. Quotations are a little weaker with intimation that $5 to $5.50 per ton on foundry coke is an average. Independent producers still succeed in moving their output readily. Local consumption of coke is off but little.

Old Material.—The market still is lagging, though much scrap material is moving. Quotations are weak. Dealers still buy from time to time and repeat the statement that their plans are to lay in stock in anticipation of improved conditions. Heavy melting steel, in the absence of consumer buying, remains at $13.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	18.00 to 19.00
Iron axles	18.00 to 19.00
Steel rails	18.00 to 18.50
No. 1 cast	17.00 to 17.50
Tramcar wheels	17.00 to 17.50
Car wheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings	8.00 to 8.50
Cast iron borings	8.00 to 9.00
Rails for rolling	15.00 to 16.00

Boston

German Iron Again Dominates the Market—Scrap Prices Easier

BOSTON, April 27.—Brokers handling German iron are securing the bulk of the limited business available. One house sold approximately 2000 tons of German and domestic iron the past week, most of it German for shipment as soon as available. The combined sales of all other local houses were not much more than that amount. German iron silicons from 1.75 to 3.25 per cent, are available at $20.50 a ton on dock here duty paid, and with silicons around 2.50 have sold recently at $20, or around $22.50 to $22.75 delivered, which compares with $26.41 delivered, or $21.50, furnace, for Buffalo, and $25.65 delivered, or $22, furnace, for eastern Pennsylvania. Buffalo district iron, however, is offered at 50c. a ton concessions, and buyers maintain that differentials are waived. Although new pig iron business is limited, melters are taking contract iron freely. The curve in the New England melt has turned upward again and probably will continue to rise owing to the activity of all but textile and textile machinery plants. Indications are that at least some of those foundries that have held off buying until the Mystic Iron Works furnace blows in will be forced to come into the market shortly. The Mystic Iron Works management is aiming to start operations July 1, but intimate it may be the last of the month before things are going.

We quote delivered prices on the basis of the latest sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$25.65 to $26.15
East. Penn., sil. 2.25 to 2.75	26.15 to 26.65
Buffalo, sil. 1.75 to 2.25	25.41 to 25.91
Buffalo, sil. 2.25 to 2.75	25.91 to 26.41
Virginia, sil. 1.75 to 2.25	29.92
Virginia, sil. 2.25 to 2.75	30.42
Alabama, sil. 1.75 to 2.25	31.60 to 32.60
Alabama, sil. 2.25 to 2.75	32.10 to 33.10

Shapes and Plates.—The market is firm at 1.90c. per lb., Pittsburgh base. For plates there is a fair demand only, with buyers anticipating only immediate needs. The demand for shapes, however, is more active, although buyers are acting cautiously. Fabricators report a sizable number of orders passing through the market, but most of them involve less than 100 tons of steel each. Two or three large jobs are being figured, but details are withheld.

Sheets.—Demand is flat. According to producers the market is still suffering from overbuying during the last quarter of 1925. Competition for the little business available is exceptionally keen and prices are unsettled. Prices quoted openly are: Black, 3.35c. per lb., base Pittsburgh; galvanized, 4.60c.; blue annealed, 2.50c.

Cast Iron Pipe.—Melrose, Mass., has placed 250 tons of 6-in. to 8-in. pipe with the Warren Pipe & Foundry Co., the only municipal letting during the past week. It is expected additional New England towns and cities will be in the market after May 1, when budgets are made up. Private inquiries are quite numerous just now, but most of them are for small tonnages. Prices on small pipe continue firm, but concessions of $1 a ton have been offered recently on 12-in. pipe and larger. Prices quoted openly on domestic pipe follow: 4-in., $60.10 a ton, delivered common Boston freight rate points; 6-in. and larger, $55.10. The usual $5 differential is asked on Class A and gas pipe.

Coke.—Foundries are taking by-product coke quite freely. Numerous instances are cited where they have exceeded tonnages contracted for the first half of 1926, with two months to go before that period ends. Both the New England Coal & Coke Co. and the Providence Gas Co. will have sold considerably more foundry fuel in the first half of the year than they did in the corresponding period last year. They are still doing business on a basis of $12.50 a ton delivered within a $3.10 freight rate zone. Reports that some second half foundry coke contracts have been placed concern other than New England made fuel and the tonnage involved is unimportant.

Old Material.—Prices for most kinds of scrap are easier and business less active. The top price reported paid for heavy melting steel recently is $12.50 a ton, but in that instance quality was guaranteed against rejections, which are frequent. Adjustments on these rejections run around $2 a ton. The general top price on this material is $11, while sales are being made as low as $10.10, an average decline of 50c. a ton. Chemical borings, forged scrap, bundled skeleton, forged flashings and similar materials have dropped 50c. a ton in price, and although the average range of quotations on steel turnings, mixed borings and turnings and rolling mill borings remains as heretofore, inside are being paid more often than outside prices. Rejections of borings because of oil also are noted. The market for machinery cast is easier, but textile machinery holds firmly. The Boston & Maine Railroad closed bids on 80 cars of miscellaneous material April 23. Material sold recently by the General Electric Co., West Lynn, Mass., brought prevailing market prices.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	$19.50 to $20.00
No. 1 machinery cast	18.50 to 19.00
No. 2 machinery cast	14.50 to 15.00
Stove plate	14.00 to 14.50
Railroad malleable	19.50 to 20.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$10.10 to $11.00
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1 in. in diameter, over 2 ft. long)	10.75 to 11.25
Machine shop turnings	8.50 to 9.00
Cast iron borings, chemical	10.50 to 11.00
Cast iron borings, rolling mill	8.50 to 9.00
Blast furnace borings and turnings	8.25 to 8.50
Forged scrap	9.00 to 9.50
Bundled skeleton, long	9.00 to 9.50
Forged flashings	9.00 to 9.50
Bundled cotton ties, long	8.50 to 8.75
Bundled cotton ties, short	9.00 to 9.50
Shafting	16.00 to 16.50
Street car axles	15.50 to 16.00
Rails for rerolling	11.50 to 12.00
Scrap rails	10.50 to 11.00

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes	3.265c.
Flats, hot rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Wayne	5.50c.
Norway, rounds	6.60c.
Norway, squares and flats	7.10c.
Structural shapes—	
Angles and beams	3.365c.
Tees and zees	3.415c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hexagons	3.95c.
Squares and flats	4.45c.
Toe calk steel	6.00c.

Seattle

April Steel Buying Large—Yakima Pipe Line Needs

SEATTLE, April 26.—Orders entered by local sales managers of Eastern steel companies, also the volume of trade of local steel jobbers in April were the largest of the year, and so far there is no indication of any material falling off in the near future.

Pig Iron.—The local market continues very quiet. Foreign iron is offering here at about $21.50, but on any actual business offered, this price could be shaded at least $1 per ton. The Utah interest continues to quote foundry grades at $26, delivered Seattle.

Finished Steel.—Demand is holding up very well, and prices show no material change. Structural steel is ruling at 2.30c. to 2.35c. and several large jobs are

in sight, one of these being the New Paramount motion picture theater, which the proposed builders now say will be built of steel, the estimated quantity being 1200 tons. Plates are nominally 2.30c., but 2.25c. has recently been done. The Yakima, Wash., water line is the biggest job in sight, from 10,000 to 12,000 tons being the estimated quantity needed if the line is built. Sheets are fairly active, but some shading is being done in the black grade. Blue annealed are 3.10c. to 3.15c.; No. 28 gage black sheets are close to 3.75c., while galvanized are about 5.10c. Wire products are quiet. The forward season in the Northwest has restricted demand, as the farmers have not had time to build fences or make repairs, being busy planting. Wire nails are quote at $3.25 base, in carload lots. The Great Northern Railroad has been a buyer lately, about 4000 kegs going to the local interest. Local price is $3.25 per 100 lb. for standard sizes.

Old Material.—The local market continues very quiet, and prices have again gone off at least 50c. per ton. We now quote heavy melting steel at $11 to $11.50 per gross ton; cast iron scrap, $15 to $15.50 per net ton; old steel rails, $13 to $13.50 per gross ton for 5-ft. and longer lengths; miscellaneous and country scrap, $8 to $8.50 per net ton; rail axles, $14 to $14.50 per net ton, these prices being f.o.b. at yards, freight added to consuming point.

Buffalo

Activity in Concrete Bars—Softer Scrap Prices

BUFFALO, April 27.—Inquiry for the week runs about 12,000 tons, with a 5000-ton lot of foundry iron featuring the offerings. This tonnage is for delivery over the third quarter. The Gould Coupler inquiry for 3000 tons of basic has not been placed and it is probable that no immediate action will be taken on it. The New York Airbrake inquiry for 1000 tons is said to have been placed with the Troy furnace. The price, Buffalo, for No. 2 plain, 1.75 to 2.25 per cent silicon, is still $21, with the usual differentials holding. This is the price prevailing in the numerous 100-ton and carload lots placed during the week.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdry., sil. 1.75 to 2.25	$21.00
No. 2X foundry, sil. 2.25 to 2.75	21.50
No. 1X foundry, sil. 2.75 to 3.25	22.50
Malleable, sil. up to 2.25	21.00
Basic	20.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—The bar market is firm at 2.65c., with shapes 2.165c. to 2.265c. Specifications are fair. Reinforcing bar business is improving. Bids have been taken on 450 tons for a box factory and plans are out for 1000 tons for a cement mill. A road letting last week calls for 500 tons. Two Rochester garages will require 250 tons apiece. Galvanized sheet price is not so firm and some business has been placed at 4.50c. Warehouse business is satisfactory and wire mills are working full clip.

Old Material.—Prices are softening. There has been some buying of heavy melting steel at $15.25, against $15.75, at which the last tonnage of size was placed. For selected heavy melting steel the price being named it about $16.50. One large mill is offering no higher than $15 for ordinary steel. There has been a little buying of foundry material at $13.50 for borings. Machine shop turnings have weakened to $10.50 to $11, with a little buying going on. Some carload lots of railroad malleable have been sold at $21.50 to $22. Stocks in dealers' yards are low and the speculative element on the part of dealers is diminishing. Orders are being placed at not over 45 days in contrast to earlier 60 and 90-day contracts.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	$15.00 to $15.50
Selected No. 1 heavy melting steel	16.00 to 16.50
Low phosphorus	17.50 to 18.00
No. 1 railroad wrought	14.00 to 14.50
Car wheels	17.00 to 17.50
Machine shop turnings	10.50 to 11.00
Mixed borings and turnings	12.50 to 13.00
Cast iron borings	12.50 to 13.00
No. 1 busheling	14.00 to 14.50
Stove plate	15.00 to 15.25
Grate bars	13.00 to 13.50
Hand-bundled sheets	11.00 to 11.50
Hydraulic compressed	14.50 to 15.00
No. 1 machinery cast	17.00 to 17.50
Railroad malleable	21.00 to 22.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes	3.40c.
Mild steel bars	3.30c.
Cold-finished shapes	4.45c.
Rounds	3.95c.
No. 28 black sheets	4.60c.
No. 10 blue annealed sheets	3.90c.
No. 28 galvanized sheets	5.75c.
Common wire nails, base per keg	$3.90
Black wire, base per 100 lb	3.90

Cincinnati

Pig Iron Sales at Low Level—Little Color in Steel

CINCINNATI, April 27.—Pig iron sales in the past week dropped to the lowest level of the year. Most consumers already have covered for their second quarter requirements, while others are postponing their purchases because they believe that there is a strong possibility of further concessions by producers. Southern Ohio furnaces now are accepting single carload orders at $20, base Ironton, whereas a week ago they were receiving $20.50. There have been no sales of consequence at the former figure, so that the market on a sizable tonnage is untested. Alabama producers apparently are satisfied to confine their activities to the South, because their quotation of $22, base Birmingham, is considerably out of line with Northern foundry prices locally. The movement of Tennessee iron has been negligible, and furnace interests are holding to $21.50, base Birmingham. There has been a slight increase in the demand for Jackson County silvery iron which is steady at $27.50 for 8 per cent. A Michigan melter has bought 250 tons, while an Indiana consumer has taken 200 tons. Small lots of Valley iron have been sold in Indiana and in this city. Producers of malleable iron are quoting $20, base furnace, but consumer interest is at a low point. The Lunkenheimer Co., Cincinnati, is inquiring for 200 tons each for foundry and high silicon malleable iron. Otherwise, inquiries are only for single carloads.

Based on freight rates of $3.69 from Birmingham and $1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$25.69
Alabama fdy., sil. 2.25 to 2.75	26.19
Tennessee fdy., sil. 1.75 to 2.25	25.19
Southern Ohio silvery, 8 per cent	30.39
So. Ohio fdy., sil. 1.75 to 2.25	21.89
So. Ohio malleable	21.89 to 22.39

Finished Material.—While neither specifications nor orders in the past week indicated an active demand, bookings have been moderate in volume. Consuming industries have slackened their production to some extent and, under the circumstances, are reluctant to order for forward deliveries. Transportation facilities are so excellent that buyers are satisfied to place their requirements from week to week, especially since mills are in a position to make fairly prompt shipments. The most encouraging feature of the market is the increased purchases by jobbers, whose business has improved considerably in the past 10 days. Prices are not quite so firm as they were a week ago. Signs of further weakness in sheets have appeared, and several independent producers are offering concessions of $2 to $4 a ton on black, galvanized and blue annealed sheets. Several mills, however, are holding to 3.35c., base Pittsburgh, on black, 4.60c. on galvanized and 2.50c. on blue annealed. Automobile body sheets are quiet, with 4.40c., base Pittsburgh, as the prevailing quotation. Sellers are trying to check the tendency toward lower prices, but apparently the necessity for

tonnage to maintain operations on the present basis has been too strong for at least one or two producers to resist. Plates are fairly steady at 1.90c., base Pittsburgh, although a Cleveland mill is reported to have made second quarter contracts at 1.85c. Bars and structural shapes are firm at 2c. and 1.90c., base Pittsburgh, respectively. Trade in wire goods is lagging. Common wire nails are steady at $2.65 per keg, base Ironton, and plain wire at $2.50 per 100 lb., base Ironton. Local fabricators report that business has improved in the past week. There are a number of small jobs on which bids have been taken recently, and it is anticipated that production will be increased in the near future.

Reinforcing Bars.—Aside from an award of 300 tons for the Fountain Theater, Cincinnati, to the Pollak Steel Co., sales have been confined to lots ranging from 25 to 50 tons. It is understood that the new City Hall Building at Columbus, Ohio, is to be built of reinforced concrete, but the bar tonnage is not known. This is the first sizable job that has appeared in this district for several months. New billet bars are selling at 2c., Cleveland, and rail steel bars at 1.90c., mill.

Old Material.—Mills in this territory are taking their contract requirements, but are not buying for future delivery. In fact, several Southern plants have asked for temporary suspension of shipments on contract. Activities in foundry grades are lagging, although prices have not changed, those quoted below are merely nominal.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton

Heavy melting steel	$12.00 to $12.50
Scrap rails for melting	12.50 to 13.00
Short rails	17.00 to 17.50
Relaying rails	27.00 to 27.50
Rails for rolling	13.50 to 14.00
Old car wheels	12.50 to 13.00
No. 1 locomotive tires	16.50 to 17.00
Railroad malleable	15.50 to 16.00
Agricultural malleable	14.00 to 14.50
Loose sheet clippings	7.50 to 8.00
Champion bundled sheets	9.50 to 10.00

Per Net Ton

Cast iron borings	7.00 to 7.50
Machine shop turnings	6.50 to 7.00
No. 1 machinery cast	17.50 to 18.50
No. 1 railroad cast	14.00 to 14.50
Iron axles	20.50 to 21.00
No. 1 railroad wrought	9.00 to 9.50
Pipes and flues	7.50 to 8.00
No. 1 busheling	9.00 to 9.50
Mixed busheling	7.50 to 8.00
Burnt cast	7.50 to 8.00
Stove plate	9.00 to 9.50
Brake shoes	9.50 to 10.00

Coke.—Producers of by-product coke have announced that the present schedule of prices will be continued during May. Foundry grades will continue to sell at $10.14, delivered Cincinnati. In the domestic sizes, egg and walnut will remain at $7.14, delivered here, and No. 2 nut at $6.64. Shipments of by-product foundry coke in April have been less than those in the previous month, but present indications are encouraging for an increased tonnage in May. An automobile company in the Detroit district has contracted with a New River producer for a large quantity of beehive foundry coke. An Ironton blast furnace, which recently changed from by-product to beehive furnace coke, is reported to have secured a delivered price of approximately $5 a ton.

Based on freight rates of $2.14 from Ashland, Ky., $3.53 from Connellsville, and $2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Connellsville foundry, $7.53 to $9.53; Wise County foundry, $6.84 to $7.59; New River foundry, $9.59 to $10.09; by-product foundry, $10.14.

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes	3.40c.
Bars, mild steel or iron	3.30c.
Reinforcing bars	3.30c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Open-hearth spring steel	4.75c. to 5.75c.
No. 28 black sheets	4.10c. to 4.30c.
No. 10 blue annealed sheets	3.60c.
No. 28 galvanized sheets	5.25c. to 5.40c.
Structural rivets	3.75c.
Small rivets	65 per cent off list
No. 9 annealed wire, per 100 lb	$3.00
Common wire nails, base per keg	2.95
Cement coated nails, base per 100-lb. kg.	3.15
Chain, per 100 lb	7.55
	Net per 100 Ft.
Lap welded steel boiler tubes, 2-in.	$18.00
4-in.	38.00
Seamless steel boiler tubes, 2-in.	19.00
4-in.	39.00

Toronto

Railroad Buying Accounts for Improvement in Canada

TORONTO, ONT., April 27.—The production of pig iron in Canada for the month of March amounted to 53,251 long tons, which is 7 per cent above the 49,746 tons reported for February. Foundry and malleable iron declined from 19,733 tons in February, to 18,800 tons in March, while the output of basic iron increased from 30,013 tons in February to 34,451 tons in March.

The cumulative production for the first three months of this year amounted to 159,641 long tons, which compares with 121,740 tons for the corresponding three months last year. This year's production consisted of 109,213 tons of basic, which was made for the further use of reporting firms; 42,243 tons of foundry iron and 8185 tons of malleable iron, the latter grades being chiefly for sale.

During the latter part of March the Algoma Steel Corporation, Sault Ste. Marie, Ont., blew in its No. 3 blast furnace but this furnace was not making iron until the first of the present month, so that its output will not be listed until April's figures are available. At the close of March there were six blast furnaces blowing located as follows: Halifax, N. S., two; Hamilton, Ont., two, and Sault Ste. Marie, Ont., two. In addition to the six stacks blowing on the first of April, the Canadian Furnace Co., Port Colborne, Ont., blew in its blast furnace April 15, which is now producing foundry and malleable iron for the Canadian market. This makes seven furnaces now blowing in Canada.

The placing of rolling stock, rail and other business by the Canadian railroads has greatly stimulated the mill activities of this country, with the result that at the present time these are operating on a more active basis than at any time in the past five years. Foundries and other consumers of foundry iron have failed to show improvement in operations, with the result that the daily melt ranges from but 35 to 50 per cent.

During the past month or six weeks improved demand for foundry and malleable iron featured this market and contracts for the second quarter and even some buying up to the end of August has been reported. Sales of the past week, however, have been confined chiefly to lots ranging from 100 to 200 tons for spot delivery. There has been no change in Canadian prices since the first of the year. Prevailing prices follow: No. 1 (2.25 to 2.75 per cent silicon), $26.85; malleable, $26.85; No. 2 (1.75 to 2.25 per cent silicon), $26.35, Toronto. Montreal prices are No. 1 (2.25 to 2.75 per cent silicon) $29.25; malleable, $29.25; No. 2 (1.75 to 2.25 per cent silicon), $28.75.

In March the production of steel ingots in Canada rose to 58,765 tons, or an advance of 10 per cent over the 53,157 tons reported for February. For the three months of the year ended March the production of steel ingots and castings amounted to 180,458 long tons, which compares with 171,952 tons for the corresponding period last year.

Members of the Engineering Society of Western Pennsylvania will visit Cleveland May 1 and will be the guests of members of the Cleveland Engineering Society. The visitors will inspect the plant of the W. S. Tyler Co., and the power plant of the Cleveland Electric Illuminating Co. A dinner and smoker for the two societies will be held in the evening.

FABRICATED STEEL

Awards Total Less Than 13,000 Tons and Pending Projects Also Are in Small Volume

Structural steel lettings during the week totaled less than 13,000 tons, one of the lightest weeks of the year. A loft building in New York, 1250 tons, and a building in Chicago, 1600 tons, were the largest awards, others being under 1000 tons each, and many of them under 500 tons. Pending projects total about 10,000 tons.

PITTSFIELD, MASS., 175 tons, storehouse for General Electric Co., to Levering & Garrigues Co.

CAMBRIDGE, MASS., 700 tons, Holy Ghost Hospital addition, to Palmer Steel Co.

STOUGHTON, MASS., 100 tons of plates for standpipe, to Chicago Bridge & Iron Works.

NEW YORK, 100 tons, garage at 424 East Eighty-ninth Street, to Grand Iron Works.

NEW YORK, 100 tons, alterations to United States Trust Co. Building, 45 Wall Street, to Reliance Steel Fabricators.

NEW YORK, 1250 tons, loft building at 251 West Thirtieth Street, to Bethlehem Fabricators, Inc.

NEW YORK, 400 tons, office building on Madison Avenue near Sixtieth Street, to Bethlehem Fabricators, Inc.

NEW YORK, 400 tons, hotel at 106 West Fifty-sixth Street, to Bethlehem Fabricators, Inc.

NEW YORK, 300 tons, cab ramp at Pennsylvania Station, to Phoenix Bridge Co.

BROOKLYN, 140 tons, addition to Bush Terminal at Forty-first Street and First Avenue, to Post & McCord.

BROOKLYN, 250 tons, coal handling structures for the Brooklyn Union Gas Co., to Berlin Construction Co.

JAMAICA, L. I., 285 tons, bank and office building, to Bethlehem Fabricators, Inc.

PORT CHESTER, N. Y., 300 tons, savings bank, to Berlin Construction Co.

PASSAIC, N. J., 300 tons, Passaic Arms Apartments, to Bethlehem Fabricators, Inc.

CAMDEN, N. J., 450 tons, insulating board manufacturing plant, to Shoemaker Bridge Co.

EDDYSTONE, PA., 650 tons, tank shop for Baldwin Locomotive Works, to Phoenix Bridge Co.

MARCUS HOOK, PA., 100 tons, bridge for Pennsylvania Railroad, to American Bridge Co.

BENNINGS, D. C., 600 tons, power plant for the Potomac Electric Power Co., to Jones & Laughlin Steel Corporation.

MOBILE, ALA., 900 tons, State Docks Commission, cotton warehouse, to Decatur Cornice Co., Decatur, Ala.

COLUMBUS, OHIO, 445 tons, bridge for Pennsylvania Railroad, to American Bridge Co.

LOUISVILLE, HENDERSON & ST. LOUIS RAILROAD, 800 tons, bridge over Green River in Kentucky, to Louisville Bridge & Iron Co.

SPEEDS, IND., 250 tons, Louisville Portland Cement Co., plant, to Grainger & Co., Louisville.

CHICAGO, 225 tons, addition to building for Marshall Field & Co., to A. Bolters Sons.

CHICAGO, 1600 tons, building on Lake Shore Drive, to McClintic-Marshall Co.

MILWAUKEE, 120 tons, Tegtmeyer Hotel and store building, to Lakeside Bridge & Steel Co.

MILWAUKEE, 130 tons, garage for *Milwaukee Journal*, to Milwaukee Bridge Co.

ST. LOUIS, 400 tons, Southern Car Wheel Co., foundry, to Virginia Bridge & Iron Co., Roanoke, Va.

SAN FRANCISCO, 410 tons, roof for State Armory, Fourteenth and Mission Streets, to Schrader Iron Works, San Francisco.

SAN FRANCISCO, 117 tons, apartment house, Washington and Powell Streets, to Brode Iron Works, San Francisco.

LOS ANGELES, 150 tons, theater, Wilshire Boulevard and Sycamore Street, to Union Iron Works.

LOS ANGELES, 150 tons, theater, Maplewood and Western Avenues, to McClintic-Marshall Co.

LOS ANGELES, 100 tons, school, Huntington Beach, to Minneapolis Steel & Machinery Co.

LOS ANGELES, 240 tons, for 7000-bbl. oil barge for Associated Oil Co., to Los Angeles Shipbuilding Co.

Structural Projects Pending

ORONO, ME., 100 tons, mechanical engineering building.

BOSTON, 150 tons, Boston Arena, balcony.

BOSTON, 2500 tons, Keith Theater.

NEW YORK, 1200 tons, two loft buildings on West Thirtieth Street.

PENNSYLVANIA RAILROAD, 200 tons, a bridge on the St. Louis division.

COLUMBUS, OHIO, tonnage unknown, City Hall; Allied Architects Association, Columbus, architect.

PEORIA, ILL., 1200 tons, Commercial Solvent Co., factory.

MILWAUKEE, tonnage not stated, Hotel Schroeder, 18 stories; Holabird & Roche, architects, Chicago.

OMAHA, NEB., 1000 tons, garage for Metropolitan Utilities Co.

OKLAHOMA CITY, OKLA., 400 tons, Mid Continent Life Insurance Co., office building.

PORTLAND, ORE., 600 tons, Multnomah Stadium; bids in.

PORTLAND, 400 tons, three bridges for State Highway Commission; bids close April 29.

LOS ANGELES, 650 tons, municipal garage; bids close April 27.

OROVILLE, CAL., 125 tons, Thermalito Irrigation District pipe line, Western Pipe & Steel Co. low bidder.

LA MESA, CAL., 1000 tons, pipe line for Lemon Grove and Spring Valley Irrigation District, San Diego County, riveted or lock-bar pipe; bids close May 10.

ROSEVILLE, CAL., 400 tons, pipe line.

REINFORCING STEEL

Week's Awards Total About 8500 Tons, Including 2500 to 3000 Tons for Akron, Ohio

The Jones & Laughlin Steel Corporation will furnish 2500 to 3000 tons of concrete reinfrocing bars for a sewage disposal plant at Akron, Ohio. The next largest award in a week's total of about 8500 tons was 1000 tons of foreign bars for a Philadelphia apartment building. Award follows:

BROOKLYN, 100 tons, tank foundation for Brooklyn Union Gas Co., to Igoe Brothers.

NEW YORK, 520 tons, loft building at 233 Spring Street, to McClintic-Marshall Co.

IRVINGTON, N. J., 100 tons, reinforced paving, to Igoe Brothers.

SOUTH ORANGE, N. J., 140 tons, high school, to Borough Building Products Co., New York.

PHILADELPHIA, 500 tons, building at Forty-second and Locust Streets, to Concrete Steel Co.

PHILADELPHIA, 1000 tons, Alden Manor Apartments, to F. R. Phillips & Sons Co. (foreign steel).

RICHMOND, VA., 550 tons, factory building, to Virginia Steel Co., Richmond.

BUFFALO, 400 tons, building for Pennsylvania Cement Co., to Jones & Laughlin Steel Corporation.

AKRON, OHIO, 300 tons, Schraeder Building, to Jones & Laughlin Steel Corporation.

AKRON, 2500 to 3000 tons, Akron sewage disposal plant, to Jones & Laughlin Steel Corporation.

CINCINNATI, 300 tons, Fountain Theater, to Pollak Steel Co.

TENNESSEE, 150 tons, State highway bridge, to Concrete Engineering Co.

CHICAGO, 110 tons rail steel, Halsted Street Church, to Olney J. Dean & Co.

CHICAGO, 275 tons rail steel, Surf Street apartment house, Olney J. Dean & Co.

CHICAGO, 140 tons, building for American Bank Note Co., to Joseph T. Ryerson & Son.

CHICAGO, 200 tons, Western Avenue pumping plant, to Joseph T. Ryerson & Son.

CHICAGO, 100 tons rail steel, Bain Building, Sixty-third Street and Ashland Avenue, to Concrete Engineering Co.

CHICAGO, 170 tons rail steel, Edgewater Community Presbyterian Church, to Calumet Steel Co.

SPRINGFIELD, ILL., 175 tons, State road work, to Kalman Steel Co.

MINNESOTA, 300 tons, State highway work, to Olney J. Dean & Co.

ST. LOUIS, 70 tons, apartment house, Laclede and Newstead Avenues, to Laclede Steel Co., St. Louis.

SAN FRANCISCO, 100 tons, West Portal School, to Badt-Falk & Co.

MONTAGUE, CAL., 100 tons, Montague Irrigation District, to unnamed firm.

LOS ANGELES, 150 tons, Haufer Packing Co. plant, Santa Fe Avenue, to George L. Eastman Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

BROOKLYN, N. Y., 305 tons, garage for the Packard Motor Co.

NILES CENTER, ILL., 350 tons, main building of Sanitary District sewage disposal plant.

CHICAGO, 130 tons, Prairie Farmer Publishing Co., building.

CHICAGO, 811 tons, Sheriden-Aldine Hotel; general contractor, McLennan Construction Co.

Navy Will Divide Orders for Plates

WASHINGTON, April 27.—The Bureau of Supplies and Accounts, Navy Department, is expected to award practically all of the 1200 tons of shapes for light cruiser No. 24 to the Carnegie Steel Co., and to distribute the 2700 tons of hull plates for that vessel to Carnegie, Worth Steel Co., and Alan Wood Iron & Steel Co. The Carnegie bid on shapes was 2.44c., Brooklyn, on most of the items, with a slightly lower figure on others. Carnegie, Worth and Alan Wood all bid 2.34c., Brooklyn, on plates.

NON-FERROUS METAL MARKETS

The Week's Prices

Cents per Pound for Early Delivery

	Apr. 21	Apr. 22	Apr. 23	Apr. 24	Apr. 26	Apr. 27
Lake copper, New York	14.12½	14.12½	14.12½	14.12½	14.12½	14.12½
Electrolytic copper, N. Y.*	13.62½	13.62½	13.62½	13.62½	13.75	13.75
Straits tin, spot, New York	62.75	63.00	63.50	....	64.25	63.75
Lead, New York	7.85	7.85	7.85	7.85	7.85	7.85
Lead, St. Louis	7.60	7.60	7.60	7.60	7.60	7.60
Zinc, New York	7.25	7.25	7.27½	7.27½	7.30	7.30
Zinc, St. Louis	6.90	6.90	6.92½	6.92½	6.95	6.95

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, April 27.—The markets are generally quiet but prices are fairly firm, though tin has advanced quite sharply. After fluctuating within narrow limits, copper is a little stronger. The lead market is steady and moderately active. Zinc is a little higher in a fairly active market.

Copper.—During most of the week electrolytic copper has fluctuated between 13.87½c. and 14c., delivered, with fairly good buying by domestic consumers at the lower level. Yesterday and today practically no metal was available under 14c., delivered. There is quite a perceptible increase in demand for export and this week this is the feature. Bids as high as 13.95c., f.a.s., were ruling today and a good business is being done with Germany, France and England. It is the opinion of one producer that the market will continue to fluctuate within narrow limits for some little time yet. The business of consumers of copper is reported as still quite satisfactory. Lake copper is quoted at 14.12½c., delivered.

Tin.—For the week ended Saturday, April 24, about 1200 tons of Straits tin is estimated to have been sold with both dealers and consumers participating. Considerable of the buying was for June and July arrival but it is believed that consumers have more to purchase for these positions. They are evidently largely covered for prompt and May metal. Up to the present time, tin is fairly scarce but enough is offered to take care of the demand at a price, which explains the premium for early deliveries. It is pointed out that on some inactive days there is less offering than on active days, or in other words, that sellers are not forcing the issue. May deliveries are now close to the spot price and there is a question as to whether there will not be a shortage for May. In London today prices were almost on a par with those of a week ago, with spot standard quoted at £279, future standard at £269 15s and spot Straits at £287. The Singapore price today was £278 5s. Spot Straits tin today was quoted at 63.75c., New York, with the market moderately active. Arrivals thus far this month have been 4935 tons, with 5910 tons reported afloat.

Lead.—May and prompt lead are not in large supply, but the situation in general is good, particularly in this country. In London the market is weak and will bear watching. The leading interest continues to quote 7.85c., New York, as its contract price, which is also that of the outside market. At St. Louis independent producers are asking from 7.50c. to 7.75c., St. Louis, depending on the position.

Zinc.—The market for prime Western zinc has gradually turned stronger after receding to the low point of the year at 6.90c., St. Louis. The slightly higher levels are not due to heavy buying but to various other minor causes, among which may be mentioned the slightly better sentiment in general business which developed last week and the stronger stock market. An inquiry for several hundred tons was before the market today, with prime Western quoted at 6.95c., St. Louis, or 7.30c., New York.

Nickel.—Quotations for ingot nickel in wholesale lots are unchanged at 35c., with shot nickel at 36c. and electrolytic nickel at 39c. per lb.

Antimony.—Chinese metal for spot and early delivery is quoted at 17c., New York, duty paid, with futures from 13.50c. and higher, depending on the position, this quotation applying to May-June shipment from China.

Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig	64.75c. to 65.50c.
Tin bar	68.25c. to 68.75c.
Copper, Lake	15.50c.
Copper, electrolytic	15.25c.
Copper, casting	15.00c.
Zinc, slab	8.25c. to 8.75c.
Lead, American pig	8.75c. to 9.75c.
Lead, bar	11.25c. to 12.25c.
Antimony, Asiatic	19.00 to 20.00c.
Aluminum, No. 1 ingots for remelting (guaranteed over 99 per cent pure)	30.00c. to 30.50c.
Babbitt metal, commercial grade	30.00c. to 35.00c.
Solder, ½ and ½ guaranteed	41.00c.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig	69.00c.
Tin, bar	71.00c.
Copper, Lake	15.00c.
Copper, electrolytic	15.00c.
Copper, casting	14.00c.
Zinc, slab	9.00c.
Lead, American pig	9.00c. to 9.50c.
Antimony, Asiatic	23.50c.
Lead, bar	11.25c.
Babbitt metal, medium grade	23.50c.
Babbitt metal, high grade	72.00c.
Solder, 50-50	41.00c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—	
High brass	18⅞c. to 19⅞c.
Copper, hot rolled	22½c. to 23½c.
Copper, cold rolled, 14 oz. and heavier	24¾c. to 25¾c.
Seamless Tubes—	
Brass	23½c. to 24½c.
Copper	24¼c. to 25¼c.
Brazed Brass Tubes	26⅞c. to 27⅞c.
Brass Rods	16⅝c. to 17⅝c.

From New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks	13.25c.
Zinc sheets, open	13.75c.

Non-Ferrous Rolled Products

Mill prices in brass, bronze and copper products are unchanged. Zinc and lead sheets remain unchanged since the reductions made five weeks ago.

List Prices Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight Up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets	
High brass	18.87½c.
Copper, hot rolled	22.50c.
Zinc	11.75c.
Lead (full sheets)	11.75c.
Seamless Tubes	
High brass	23.50c.
Copper	24.25c.
Rods	
High brass	16.62½c.
Naval brass	19.37½c.
Wire	
Copper	15.75c.
High brass	19.37½c.
Copper in Rolls	21.37½c.
Brazed Brass Tubing	26.87½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide	37.50c.
Tubes, base	48.00c.
Machine rods	34.00c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is obtainable as ingots at 27c. to 28c. per lb., delivered.

CHICAGO, April 27.—Lake copper is off slightly in a quiet market and the price of tin remains unchanged under the influence of a fair demand. Imports of foreign lead are a disturbing factor and the price is lower. Early in the week the price of zinc eased off but it held firmly at the lower quotation throughout the last few days. The old metal market is more active and the price of several commodities has advanced. We quote, in carload lots: Lake copper, 14c.; tin, 65c.; lead, 7.75c.; zinc, 7.05c.; in less than carload lots, antimony, 20c. On old metals we quote copper wire, crucible shapes and copper clips, 10.50c.; copper bottoms, 9.50c.; red brass, 9.25c.; yellow brass, 8c.; lead pipe, 6.75c.; zinc, 5c.; pewter, No. 1, 37c.; tin foil, 44c.; block tin, 52c.; aluminum, 19.50c.; all being dealers' prices for less than carload lots.

Old Metals, Per Lb., f.o.b. New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	11.75c.	13.25c.
Copper, heavy and wire	11.50c.	12.75c.
Copper, light and bottoms	9.50c.	11.00c.
Brass, heavy	7.25c.	9.00c.
Brass, light	6.25c.	7.75c.
Heavy machine composition	8.75c.	10.00c.
No. 1 yellow brass turnings	8.25c.	9.00c.
No. 1 red brass or composition turnings	8.00c.	9.00c.
Lead, heavy	6.50c.	7.00c.
Lead, tea	5.00c.	6.00c.
Zinc	4.00c.	4.75c.
Cast aluminum	18.00c.	19.50c.
Sheet aluminum	18.00c.	19.50c.

REORGANIZES PRODUCTION

Pratt & Whitney Co. Makes Most Extensive Changes in Its 65 Years

During the past six months the Pratt & Whitney Co., Hartford, has been engaged in thoroughly reorganizing the facilities of its different departments. As a result, the company has completed the most extensive plan of development of its 65 years of existence.

Whole departments have been moved about. Offices have been placed in the central part of the works and company executives located at points in close touch with their subordinates. This rearrangement has enabled the company to dispense with a considerable amount of floor space previously employed. Three complete buildings have been rented to outsiders for storage purposes, for a period of five years. Another building has been set aside to be used for manufacturing airplane engines by the Pratt & Whitney Aircraft Co.

Renovations of buildings and uniform painting have accompanied this change. A new lighting system has been installed and a large amount of new accessory equipment. The forging department has been discontinued, forgings being purchased from outside sources. The former forging building, in the center of the works, is to be used for the maintenance departments.

Old machinery and tools have been discarded and are being scrapped. In two months alone 26 carloads of second-hand machinery were shipped out and the equivalent of nearly 100 carloads has been transferred to the scrap heap for remelting in cupolas. Modern machinery is being installed to take the place of what was disposed of, all with a view to increasing efficiency and to turning out more accurate work in larger quantities.

FOUNDRY SUPPLY TRADE ACTIVE

Equipment Business Gains 25 Per Cent Over First Quarter of 1925

Members of the Foundry Equipment Manufacturers' Association, at their spring meeting held at French Lick, Ind., April 22-23, reported a high rate of activity in the first quarter of the year, putting the increase at 25 per cent over the first quarter of 1925. Shipments have been large in April and new business is reckoned as normal. The attendance at the meeting reached high point in the association's history, including a considerable group of invited guests. Several new members were added and further growth is promised through the year.

Arrangements were completed for the association to be represented with a booth of its own at the annual foundry exhibition in Detroit in September. Data regarding the activities of the organization will be available at the exhibition, and the booth will be in charge of a special representative of the equipment manufacturers.

S. T. Johnston, S. Obermayer Co., Chicago, president of the association, occupied the chair, assisted by Vice-President T. W. Pangborn, Pangborn Corporation, Hagerstown, Md.

G. B. Pickop, Malleable Iron Fittings Co., Branford, Conn., made a report covering recent progress in the development of permanent molds. P. B. Crouse, Whiting Corporation, Harvey, Ill., held the attention of the members for over an hour describing the application of the group bonus plan of wage payment. This method of payment by results, Mr. Crouse showed, avoids the difficulties which frequently arise in setting piece rates. Its advantages are definite increases in production, a more satisfied body of workmen, better direction on the part of the foremen (who also receive bonuses), and a much reduced labor turnover.

"Long Terms on Machinery Sales" were discussed by A. F. Jensen, Hanna Engineering Works, Chicago. S. C. Vessy, W. W. Sly Mfg. Co., Cleveland, presented a report on conditional sales. C. E. Hoyt, executive secretary American Foundrymen's Association, described the arrangements for the Detroit exhibition of foundry and shop equipment, which will probably be the largest ever held. The equipment association pledged its cooperation in the entertainment of the overseas delegates who will attend the Second International Foundrymen's Congress, held in Detroit simultaneously with the exhibition.

The next meeting of the Foundry Equipment Manufacturers' Association will be in Cleveland, June 22.

Products for Irrigation Admitted Free Into Mexico

WASHINGTON, April 27.—All kinds of machinery and implements, a number of iron and steel products and related items designed for works of irrigation are, effective April 8, admitted free of duty into Mexico, according to a decree published in the Diario Official, says a report to the Department of Commerce from Commercial Attaché A. V. Dye, Mexico City. No special orders are necessary from the Secretary of the Treasury, but it is sufficient to have the authorization of the National Irrigation Commission or its duly authorized agents.

Postpones Hearing on Pig Iron Freight Rates to New England Points

WASHINGTON, April 27.—The Interstate Commerce Commission has postponed from today until the second week in May further hearing in connection with rates on pig iron from the Troy, N. Y., and Boston furnaces to New England points. The definite date has not been set.

PERSONAL

P. C. Patterson and G. P. McNiff

P. C. Patterson, who has been assistant vice-president National Tube Co., has been advanced to the position of vice-president in charge of operations, succeeding Taylor Allderdice, recently elected to the presidency of the company. Gilbert P. McNiff, who has been assistant to the vice-president, in charge of seamless mill operations, has been made assistant vice-president, in succession to Mr. Patterson.

Mr. Patterson dates his start in the steel industry back to 1881, when as a boy he worked during the summer school vacation periods in the machine shop of the National Tube Works Co., McKeesport, Pa. He never has worked outside of the tubular division of the industry nor for any other company than the National Tube Co. He was born in Brooklyn, May 31, 1869. His father, Peter Patterson, became connected shortly thereafter with the National Tube Works Co., then located in Boston, a location too far removed from its sources of raw material and fields of greatest pipe consumption, the oil producing districts. In 1872 McKeesport, Pa., was selected as the site for a new plant. In its construction and operation Peter Patterson took a prominent part, serving for many years as superintendent of the National Tube Works and manager of the United States Seamless Tube Works, as the seamless tube department of the company then was known. To P. C. Patterson and his father is due no small measure of credit for the advancement of the methods and means for producing tubular products. Mr. Patterson attended the public schools at McKeesport and the University of Western Pennsylvania (now the University of Pittsburgh). Upon completion of his college course he returned to the machine shop to finish learning the machinist's trade. The succeeding steps were from machine shop to drafting room, back to machine shop as foreman, to superintendent of lapweld mills and then to construction engineer and superintendent of departments, all at McKeesport. Following the absorption of the National Tube Co. by the United States Steel Corporation in 1901, Mr. Patterson was transferred to the general office in Pittsburgh as mechanical engineer, later becoming chief engineer in charge of design of new works. Under his direction and supervision the plants of the company at Lorain, Ohio, and of the Gary Tube Co. at Gary, Ind., were built. About three years ago Mr. Patterson became assistant vice-president. This promotion brought him into the operating department, at the head of which his position of vice-president now places him.

G. P. McNIFF

R. C. PATTERSON

Mr. McNiff was born in Harrisburg, Pa., Sept. 18, 1885, and was graduated from Lehigh University in 1906 as a metallurgical engineer. He entered the employ of the Carnegie Steel Co. that year, in the open-hearth department, Homestead works. He went thence into the metallurgical department and in 1911 was appointed metallurgist of that works. Transferring from the Carnegie Steel Co. to the National Tube Co. in 1912, he served in its metallurgical department until 1915, when he was appointed metallurgical engineer. In that position he had charge of all the shell production, torpedo air flasks and special munitions of the company during the World War period. On Jan. 1, 1922, he was promoted to the position of assistant to vice-president in charge of seamless mill operations, taking over the duties of John H. Nicholson, who was appointed vice-president in charge of sales of the company. Mr. McNiff holds the rank of Lieutenant-Colonel, United States Army Ordnance Reserve, in charge of ammunition manufacture, Pittsburgh district.

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Emil Gathmann was elected president of the Gathmann Engineering Co., metallurgical engineer and maker of ingot molds, Baltimore, at a meeting of the company's directors held April 19.

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C. L. McKenzie, president Duquesne Slag Products Co., Pittsburgh, was reelected president of the National Slag Association at its ninth annual meeting on April 9, in the Old Colony Club, Cleveland. C. E. Ireland, vice-president Birmingham Slag Co., Birmingham, was re-elected vice-president and H. J. Love, secretary-treasurer, with offices at 933 Leader-News Building, Cleveland.

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Chris Sodemann, special representative of the National Automatic Pan Corporation, Los Angeles, sailed April 22 to visit the principal manufacturing centers of Europe. He plans to remain in Europe for several months.

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Charles H. Clark has been appointed raw material salesman for the Bridgeport Brass Co., Bridgeport, Conn., traveling Massachusetts and the cities of Providence, R. I., and Meriden, Conn. His headquarters are at 1488 Commonwealth Avenue, Boston.

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Ross Huntington McMaster, who was elected president of the Steel Co. of Canada, Ltd., Hamilton, Ont., last month, was born Oct. 11, 1880, in Montreal and was educated in the Montreal High School and Collegiate Institute. At the age of 17 he entered the employ of the Sherwin-Williams Co., paints and varnishes, Montreal and Cleveland, becoming assistant to the vice-president and general manager. In 1903 he became assistant to vice-president and general manager of the Montreal Rolling Mills Co., remaining with that company until the formation in 1910 of the Steel Co. of Canada, Ltd., when he became manager at Montreal. In 1916 he was made assistant general manager of the company, appointed vice-president in 1919, and president last month. In 1918 he was a member of the Canadian War Mission at Washington. Among his directorships, aside from the Steel Co. of Canada, Ltd., are the Canadian Consolidated Rubber Co., Ltd., Canadian Explosives, Ltd., Canadian Pacific Railway Co., Northern Electric Co., Ltd., Royal Trust Co., and the American Iron and Steel Institute. He is a member of nine clubs, seven of them in Montreal, and is much devoted to outdoor sports.

R. H. McMASTER

Frank Hibbard has been elected chairman of the board of Hibbard, Spencer, Bartlett & Co., steel and hardware jobbers, Chicago. C. J. Whipple has been elected president, to succeed John J. Charles, who died April 6, as noted in THE IRON AGE of April 15. F. G. Russell and Frank H. Warren have been elected vice-presidents, Mr. Warren being also a director. Mr. Hibbard, who was born in Chicago in 1873, is a son of William Gold Hibbard, founder of the company. He entered the employ of the company in 1895, serving in various capacities and becoming a vice-president in 1903. Mr. Whipple, born in Chicago in 1885, was graduated from the University of Michigan in 1907. He

C. J. WHIPPLE

FRANK HIBBARD

has been with the company since February, 1908, having been put in charge of the operating department in December, 1912. Mr. Russell was born in Aylmer, Ont., in 1881. He entered the employ of the company in 1897, passing through various departments and taking charge in 1916 of the manufacturing sales department and of the city sales department in 1918. Mr. Warren was born at St. Joseph, Mo., in 1878. He was graduated from Yale University in 1899 and entered the present company in August of that year. In 1919 he became manager of the railroad supply department, and was made a director in 1920.

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William Kerber, resident manager at Cincinnati for the M. A. Hanna Co., has been transferred to Buffalo, where he will be associated with George Maltby in handling the company's pig iron sales in that territory. He will be succeeded by Fred Teal, who has been connected with the Cincinnati office of Rogers, Brown & Crocker Brothers, Inc. Mr. Teal and Julian Bolton, who has been associated with the Cleveland office of the M. A. Hanna Co., will cover the pig iron trade in the Cincinnati territory.

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N. L. Van Tol has been promoted to general superintendent of the Fairfield car works of the Tennessee Coal, Iron & Railroad Co., succeeding R. R. Baxter, who was made assistant to the vice-president, as noted in THE IRON AGE of April 15. W. E. Brooks was made assistant general superintendent of the car works.

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Edward H. Korte, purchasing agent Lunkenheimer Co., Cincinnati, was elected president of the Cincinnati Association of Purchasing Agents at its annual meeting on April 20. L. W. Scott Alter, American Tool Works Co., was chosen vice-president. Harry Fenner, Cincinnati Shaper Co., the retiring president, was named as one of the directors.

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Barry Cool has become vice-president in charge of sales of the Simoniz Co., Chicago.

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Prof. George I. Alden, chairman of the board of directors Norton Co., Worcester, Mass., last week celebrated his eighty-third birthday. He was the recipient of many gifts from friends.

Frederick B. Hufnagel has been elected president Crucible Steel Co. of America, to succeed E. C. Collins, who resigned the position several weeks ago. Mr. Hufnagel has been president Pittsburgh Crucible Steel Co., a subsidiary of the Crucible Steel Co., and a vice-president of the latter, since late in 1920. He will continue as president of the subsidiary company, dividing his time between Pittsburgh and New York, as he has since the presidency of the parent company became vacant. Mr. Hufnagel has been identified with the steel industry for 26 years. He started, following his graduation from Cornell University in 1900, with the old Cleveland Rolling Mills Co., Cleveland, now the Newburgh works, American Steel & Wire Co., severing that connection in 1901 to accept a position as a member of the engineering staff of the Jones & Laughlin Steel Corporation, Pittsburgh, at its South Side works, of which he later became general superintendent. In 1913 he was appointed general superintendent of the Aliquippa works of the same company at Woodlawn, Pa., and held that position until Nov. 1, 1920, when he resigned to become president of the Pittsburgh Crucible Steel Co. Mr. Hufnagel announces that no change has been made in the personnel or organization of the Pittsburgh Crucible Steel Co.

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Alexander T. Galbraith, manager of sales, Crucible Steel Co., New York, has been appointed a vice-president of the company, filling the vacancy left by the advancement of Mr. Hufnagel.

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R. W. Barry, Drying Systems, Inc., was elected president, April 21, of the Machinery Club of Chicago. Other officers elected were: W. A. Whiting, H. B. Smith Machine Co., vice-president; H. J. Reeve, Reeve-Fritts Co., treasurer; H. S. White, Cleveland Twist Drill Co., secretary and H. F. Kempe, H. F. Kempe Co., assistant secretary. The newly elected governors are C. B. Cole, R. F. Dean, H. K. Jackson and W. A. Whiting.

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Edward E. Kretschmer has been appointed director of purchases of a centralized purchasing department for the four electrically operated transportation systems under the management of Samuel Insull and associates. These associated railroads, which serve the Chicago Metropolitan district and adjoining territory, are the Chicago Rapid Transit Co., Chicago, North Shore & Milwaukee Railroad Co., Chicago, South Shore & South Bend Railroad and the Chicago, Aurora & Elgin Railroad Co. Mr. Kretschmer, a native of Chicago, entered the employ of the General Electric Co. as an office boy in 1893 and was transferred to the engineering department in 1895, where he remained until March, 1903. He studied electrical engineering at Lewis Institute, Chicago, for three years. He entered the employ of the Northwestern and Lake Street Elevated Railroad companies in March, 1903, as chief clerk to the general superintendent. He was appointed purchasing agent at the time of the consolidation of all the elevated lines in September, 1911. He was serving the Chicago Rapid Transit Co. in this capacity at the time of his new appointment, April 1. His successor is W. J. Boucher.

E. E. KRETSCHMER

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James G. Burke, Bennington, Vt., has been promoted from the post of assistant trade commissioner with a station at Madrid, Spain, to trade commissioner in charge of the newly created office of the United States Department of Commerce at Barcelona.

Harry W. Haggarty has tendered his resignation as vice-president and manager of sales of the McKinney Steel Co., Cleveland, to become effective at the annual meeting in May. The company's sales department will be temporarily in charge of J. W. Corrigan, the president, and J. F. McKesson.

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A. E. Henn, foreign sales manager, and A. E. Grissner, engineer, National Acme Co., Cleveland, are taking an extended business trip abroad. Before their return they will visit England and several of the Continental countries.

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Alfred E. Gibson, formerly general superintendent Wellman-Seaver-Morgan Co., Cleveland, has become affiliated with the Fulton Foundry & Machine Co., Cleveland, as vice-president and director.

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James E. O'Brien, of the Fanner Mfg. Co., Cleveland, has been elected president of the Cleveland Purchasing Agents' Association and Clarence W. Head, of the United States Aluminum Co., has been elected vice-president.

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William H. Walther, superintendent Bradley & Hubbard Mfg. Co., Meriden, Conn., has resigned to engage with others in the foundry industry at Wethersfield, Conn.

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George F. Hardenbergh, general manager Hofius Steel & Equipment Co., Seattle, has been elected a director of the Marine National Bank, recently opened in that city.

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A. B. Greenleaf of the Peoples Gas Light & Coke Co., Chicago, is the speaker before the Tri-City Technical Council, April 29, at the Black Hawk Hotel, Davenport, Iowa. His talk, illustrated, is devoted to "Gas in Industry." The meeting is a joint one with the Tri-City Manufacturers Association. Hon. Walter A. Rosenfield of the latter organization will act as chairman.

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Calvin W. Rice, secretary American Society of Mechanical Engineers, is making a hurried trip to England, Holland, Germany, Italy and France, investigating engineering and industrial museums, as a basis for reporting on the proposal of the late Henry R. Towne to establish in New York through a bequest "museums of the peaceful arts."

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H. Foster Bain, secretary American Institute of Mining and Metallurgical Engineers, will leave for Spain on May 3 to attend a geological congress and also to look into the museum problem as covered abroad.

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Prof. Michael Yatsevitch, at one time professor in the technical school at Kiev, Russia, but in recent years resident in England, is now visiting the United States. Shortly before the war he was a member of a group which studied technical schools of this country. Also he was the author of a notable paper presented in France some years ago on high-speed steel.

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E. C. Edmundson, Williams & Co., Inc., Pittsburgh, has been elected president of the Triangle Club, an organization composed of Pittsburgh manufacturers of, jobbers and dealers in mill, mine, hardware, plumbing and machinery supplies. Howard L. Keally, vice-president and general sales manager Pittsburgh Screw & Bolt Co., is vice-president, and Ernest S. Cox, Pittsburgh representative Chicago Nipple Mfg. Co., is secretary-treasurer. The board of governors comprises Marcus Boyd, Boiler Tube Co. of America; H. J. Casper, Pittsburgh Gage & Supply Co.; George W. Jones, Pittsburgh Steel Co.; L. V. McCune, Jenkins Brothers; Frank A. Vance, Union Radiator Co.

OBITUARY

LOUIS R. LEMOINE, chairman of the board of the United States Cast Iron Pipe & Foundry Co., Philadelphia, died early in the morning of April 23 at the home of his daughter, Mrs. Charles C. Harrison, Jr., "Chuckswood," Villa Nova, Pa., where he had been visiting when stricken with pneumonia several weeks ago.

L. R. LEMOINE

In 1883 Mr. Lemoine located in Philadelphia and became associated with R. D. Wood & Co., cast iron pipe manufacturers. In 1896 he became vice-president of the McNeal Pipe & Foundry Co., which office he held until that company was absorbed by the United States Cast Iron Pipe & Foundry Co. He then became resident manager of the plant at Burlington, N. J., and Eastern sales manager of the company. Subsequently he was appointed general sales manager of the New Jersey Zinc Co., with offices in New York, though remaining a director of the United States Cast Iron Pipe & Foundry Co. In 1910 he returned to the latter company as second vice-president in charge of sales; becoming president in 1911, and from 1923 until his death he was chairman of the board of directors. He bore a unique reputation as a pig iron buyer. For many years he bought practically all of the iron used in all of the plants of the company, frequently amounting to hundreds of thousands of tons in a year. His methods were unusual. It was said of him that he never sent out an inquiry for iron, but he was ever ready to consider an offer from a seller.

Mr. Lemoine was much interested in the Holy Trinity Church, Philadelphia, of which he was a vestryman. He was a member of the Rittenhouse Club, Philadelphia Club and the Down Town Association of Philadelphia. His residence was at 1934 Locust Street, Philadelphia. He was born in St. Louis on July 3, 1859, the son of Dr. Edwin Spotswood Lemoine. In 1880 he married Augusta B. Blow, a daughter of Taylor Blow of St. Louis. Mrs. Lemoine died two years ago. Mrs. Harrison, at whose home he died, was his only child. There are four grandchildren.

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PETER BOLLER, president of the Peter Boller Machine Works, Chicago, died recently at his winter home in Orlando, Fla. He was born May 28, 1862, in Chicago, and at the age of eleven years left school to go to work as a wagon driver for a livery concern. Later he entered the employ of Crane Co., as a machinist, and worked his way up to superintendent for that company. At the time the Crane Co. discontinued its elevator business, Mr. Boller and several of his former associates started a new elevator company. In 1887 he became a partner in a machine shop operated under the name of Boller & Bartels and in 1905 he bought out his partner's interest and incorporated the business as the Peter Boller Machine Works. In 1919, at the age of 57, Mr. Boller retired from the active management of the business, although retaining the presidency. He turned his affairs over to his two older sons, William P. and Arthur N., who are at the present time operating the factory. The deceased was a member of the Chicago Hamilton Club and the Illinois Manufacturers Association.

Machinery Markets and News of the Works

MACHINE TOOL SALES DROP

Reports from Leading Selling Centers Agree on Decline in Business

A Fairly Good Volume Is Still Being Done, However, and Some Companies Are Sold Well Ahead

APRIL business in machine tools will show a drop from that of March, but buying last month was larger than is generally appreciated. One of the leading machine-tool selling agencies in the East reports that March was the best month it has had in six years.

There is an evidence of caution among buyers, who are hesitant about providing for the future and are merely taking such tools as are actually needed for work in hand. The fairly good volume of buying of the last few months, however, has placed some of the machine tool plants in a comfortable position as to orders, such plants having an assurance of fairly good operation over the next few months.

Small railroad buying continues a disappointing factor, and the automobile companies are not buying so actively as they did a year ago. Purchases by companies in the general industrial field are confined almost entirely to single tools for replacements. Plant extensions and expansion of facilities are at a minimum.

New York

NEW YORK, April 27.

INQUIRIES for machine tools are less numerous, and sales have also dropped off, but a fair volume of business in single tools is still being done. There is a fairly good demand for jig boring machines, one Eastern company having sold five within the past week. A New York company bought two vertical drilling machines. A Western railroad bought two axle lathes and a Birmingham company bought a 300-ton wheel press.

Contract has been let by the American Can Co., 120 Broadway, New York, to Lindgren & Swinerton, 225 Bush Street, San Francisco, for its proposed one-story plant at Sacramento, Cal., to cost close to $850,000 with machinery. San Francisco offices are at Third and Twenty-second Streets.

The Stein-Brill Corporation, 25 Church Street, New York, has been making inquiries for complete machinery for sugar mill, oil mill, fertilizer plant and industrial alcohol manufacturing service.

The New York Central Railroad Co., C. S. White, room 344, 466 Lexington Avenue, New York, purchasing agent, is asking bids until May 7 for one 500-kw. d.c. turbo-generator set, with generator and feeder switchboard, etc., serial contract 8-1926.

The Burnham Boiler Corporation, Irvington, N. Y., has plans under way for a two-story factory branch and distributing plant, 55 x 100 ft., at Twenty-second Street and the Long Island Railroad, Queens Village, L. I., to cost about $55,000. Alexander McLean, 149 Jamaica Avenue, Jamaica, L. I., is architect.

The Ajax Products Co., 105 Chambers Street, New York, manufacturer of radio equipment, has leased space in the building at 106 Seventh Avenue, for extensions.

In connection with an extension and improvement program during the present year to cost $11,000,000, the Long Island Railroad Co., Pennsylvania Terminal, New York, plans the construction of a new engine terminal, with shop and repair facilities for the Montauk Division, near Patchogue, L. I. A storage yard will also be built. The company will electrify the system from Floral Park to Mineola, on the main line, and from the last noted place to Valley Stream on the New York Bay extension.

The Manhattan Wood Heel Co., 600 Kent Avenue, Brooklyn, has leased the four-story factory at 118 Sanford Street, and will establish a plant at this location. It is understood that the present works will be removed to the new site. Additional machinery will be installed.

The A. P. W. Paper Co., 1273 Broadway, Albany, N. Y., has awarded a general contract to the H. K. Ferguson Co., Cleveland, for a two-story addition, 60 x 140 ft., to cost about $75,000 with equipment. The company will also build a one-story extension, 80 x 200 ft., to cost approximately $50,000.

The Tannin Corporation, 100 East Forty-second Street, New York, manufacturer of tanning extracts, has concluded arrangements for a 20-year lease of a 9-acre tract near the Marine Terminal, Wilmington, Del., as a site for a new plant to cost more than $1,000,000 with machinery. The company is now operating a plant on Greene Avenue, Brooklyn, and purposes to remove this works to the new location following completion. Carl B. Ely is president; Emmet Carter is chief engineer, and will be in charge of erection.

The Bush Terminal Co., 100 Broad Street, New York, has awarded a general contract to the Turner Construction Co. for two eight-story additions, each 200 x 200 ft., at its industrial terminal, Thirty-ninth Street and First Avenue, South Brooklyn, to cost $1,500,000 with equipment. William Higginson, 15 Park Row, New York, is architect.

The Saratoga Coal Co., Saratoga Springs, N. Y., is considering the early rebuilding of its coal pockets, with handling and distributing plant, partially destroyed by fire April 16, with loss estimated at $100,000.

The American Power & Light Co., an interest of the Electric Bond & Share Co., 71 Broadway, New York, operating utility properties in different States, is disposing of a bond issue of $10,000,000, a portion of the proceeds to be used for extensions and improvements.

The Kelvinator Corporation, 480 Lexington Avenue, New York, manufacturer of electric refrigerating equipment, with main plant at Detroit, has leased space in the new industrial building at Queens Boulevard and Rawson Street, Long Island City, for an Eastern factory branch and distributing plant.

The M. O'Neil Supply Co., 25 Cliff Street, New York, manufacturer of iron pipe, fittings, etc., will erect a new one and two-story plant and distributing works at 4617 Flushing Avenue, Long Island City, to cost about $75,000. The Ballinger Co., 100 East Forty-second Street, New York, is architect and engineer.

The Rainbow Light, Inc., 1819 Broadway, New York, manufacturer of electric lighting equipment, has leased space in a building on Thirteenth Street, Long Island City, for a new plant.

The Board of Public Works, Schenectady, N. Y., is preparing to ask bids early in June on a new two-story automobile service, repair and garage building, 60 x 200 ft., for municipal motor trucks and cars, to cost $100,000 with equipment. R. L. Bowen, 147 State Street, is architect.

The Plainfield Ice & Supply Co., Plainfield, N. J., has plans for a one-story ice manufacturing plant to cost about $35,000.

The Crane Market

THE outstanding inquiry of the week for electric overhead cranes is from the New York Rapid Transit Corporation, 85 Clinton Street, New York. The list specifies twenty-four 5-ton to 30-ton, 15-ft. to 60-ft. span electric cranes and two drop type transfer tables for shops at Coney Island. Bids will be opened May 11. The New York Central Railroad, which has been in the market for a 20-ton gantry crane for Rochester, N. Y., has issued another inquiry for a 20-ton gantry crane for Kingsbridge, New York. Inquiries for locomotive cranes are not so numerous as in recent weeks but a fair volume of business is pending.

Among recent purchases are:

Bethlehem Steel Co., Bethlehem, Pa., one 15-ton and two 10-ton overhead cranes for Sparrows Point, Md., from the Cleveland Crane & Engineering Co.

Mansville-Rand Co., Hull, Canada, a 20-ton used Brownhoist locomotive crane with 2-cu. yd. clamshell bucket, from Philip T. King, New York.

Oakwood Supply Co., Mt. Vernon, N. Y., a 10-ton, crawl-tread locomotive crane from the McMyler-Interstate Co.

Builders Supply Corporation, Jersey City, N. J., a 10-ton, crawl-tread locomotive crane from the McMyler-Interstate Co.

Buoniello Supply Co., Brooklyn, N. Y., a 10-ton, crawl-tread locomotive crane from the McMyler-Interstate Co.

Gulf Creosoting Co., New Orleans, La., a 15-ton locomotive crane from the American Hoist & Derrick Co.

Pittsburgh Plate Glass Co., Boston, a monorail system with a 2-ton transfer crane and 2-ton electric hoist for a new warehouse in Allston, from the Cleveland Crane & Engineering Co., tramrail division.

Kelly Axe & Tool Co., Charleston, W. Va., three special type 5-ton overhead cranes for its marine terminal at Glassport, W. Va., on the Monongahela River, from the Dravo Contracting Co., Pittsburgh.

The Board of Education, Ridgefield Park, N. J., plans the installation of manual training equipment in its proposed two-story high school estimated to cost $300,000, for which bids will be asked in the near future. Ernest Sibley, Bluff Road, Palisade, N. J., is architect.

The Millville Iron Foundry, Millville, N. J., is said to be planning for the early rebuilding of its plant at West Millville, recently destroyed by fire, to cost $35,000 with equipment.

The Public Service Electric & Gas Corporation, Public Service Terminal, Newark, N. J., has filed a budget with the Public Utilities Commission listing 550 items to be carried out for an expansion and improvement program during the present year, including work now in progress, to cost $50,000,000; considerable steam and electric power equipment will be required. Among the new projects, a power substation will be constructed at Hoboken, N. J., to cost $625,000. Application has been made for permission to issue new stock for $40,000,000, of which about $18,000,000 will apply on the 1926 extension program.

Fire, April 24, destroyed the acid works at the fertilizer plant of the Armour Fertilizer Works, Carteret, N. J., with loss estimated at $200,000 including equipment. Plans for rebuilding are under consideration. Headquarters are at 111 West Jackson Boulevard, Chicago.

The report of the acquisition of a large interest in Otto Roth, Inc., 11-15 Runyon Street, Newark, manufacturer of razors, by the Gillette Safety Razor Co., Boston, has been confirmed by Theodore Steinbach, vice-president and general manager of the acquired company, the sale, as well, including four plants in Germany. Plans are under way for early expansion in the Newark works to double approximately the present output. The present management, it is understood, will be retained.

Bids are being received by the Rapid Addressing Machine Co., 46 West Twenty-third Street, New York, for a proposed one-story plant, 178 x 329 ft., at Roselle, N. J., reported to cost $175,000 with machinery. The Ballinger Co., New York and Philadelphia, is architect. T. D. Adams is president.

The General Electric Co., 20 Washington Place, Newark, with headquarters at Schenectady, N. Y., has awarded a general contract to Salmond, Scrimshaw & Co., 526 Elm Street, Arlington, N. J., for a three-story addition to its plant on Cross Street, Harrison, N. J., 70 x 82 ft., to cost $80,000.

The Townsend Furnace & Machine Shop Co., Albany, N. Y., has recently been reorganized and has absorbed the Rehfuss-Begley Machine Corporation. The reorganized company will operate one of the largest foundries and machine shops in the Albany section and will specialize in the manufacture of grate bars and paper mill equipment, general repairs and contracting. The plant will not be enlarged, but the foundry facilities will be increased about 60 per cent. Carl H. Graf is president; James G. Begley, vice-president; William G. Van Loon, treasurer; L. K. Devendorf, secretary; John R. Rehfuss, general manager, and Harry Craddock, superintendent.

An involuntary petition in bankruptcy has been filed in United States district court in Buffalo against A. W. Thorpe, Inc., sheet metal contractor of Jamestown, N. Y. The petitioning creditors are the Jamestown Hardware Co., Kelsey Furnace Co., Syracuse, and F. W. Potts, Son & Co., a Connecticut concern.

Buffalo

BUFFALO, April 26.

CONTRACT has been let by the American Radiator Co., 2000 Elmwood Avenue, Buffalo, to the Crea Construction Co., Mutual Life Building, for a one-story addition to its Bond plant, 150x200 ft., to be equipped in part as a foundry. It will cost about $60,000.

The A. R. Ferguson Mfg. Co., 567 Washington Street, Buffalo, is said to be planning the installation of additional equipment, including one or more machine tools.

The Republic Metalware Co., Alabama Street, Buffalo, has awarded a general contract to the Metzger Construction Co., 676 East Genesee Street, for extensions and improvements in its three-story plant, 52x100 ft., to cost about $100,000. Hudson & Hudson, Dun Building, are architects.

The Board of Trustees, Sacket Harbor, N. Y., is asking bids until May 18 for a steel tank and 100 ft. tower, with capacity of 100,000 gal., in connection with extensions in the water system. William T. Field, Watertown, N. Y., is consulting engineer.

The American Super-Power Corporation, Henry L. Doherty, chairman, Henry Doherty & Co., 60 Wall Street, New York, has made application for authority to construct a hydro-electric power plant on Connor's Island in the Niagara River above Niagara Falls, N. Y. The project provides for the building of a double-circuit steel tower transmission line to Binghamton and other cities south, to operate at 220,000 volts. The entire development is estimated to cost $88,000,000. A second proposition is also submitted for a similar project at Long Sault and Barnhardt Islands, St. Lawrence River, to develop an ultimate of 1,600,000 hp., with two or more generating stations, to cost, with transmission system, $211,000,000. A. B. Leach is head of the executive committee of the company, and Edward C. Randall, Buffalo, president.

Holderle Brothers, 339 Exchange Street, Rochester, N. Y., manufacturers of soda fountains, etc., have plans for a one-story addition, 50x95 ft., to cost about $45,000.

The Pierce, Butler & Pierce Mfg. Corporation, Syracuse, N. Y., manufacturer of heating equipment, etc., has begun work on a new factory branch and distributing works at Dover, N. J., 40 x 185 ft., to be occupied under lease. General offices are at 41 East Forty-second Street, New York.

The Rochester Motor Inn., Inc., 208 National Bank of Rochester Building, Rochester, will construct two automobile service, repair and garage buildings on local sites, instead of one as previously announced. The first will be six stories, 106 x 150 ft., designed to accommodate 500 cars, estimated to cost $300,000; the other structure will be six stories, 130 x 140 ft., to cost close to $325,000 with equipment. Gordon & Kaelber, Sibley Block, are architects. I. W. Steele is in charge.

The St. Regis Paper Co., Watertown, N. Y., has disposed of a new bond issue of $5,000,000 a portion of the proceeds to be used for extensions and improvements in mills, including the acquisition of additional pulp properties. R. B. Maltby is vice-president.

The Weatherbest Stained Shingle Co., 154 Main Street, North Tonawanda, N. Y., is said to be planning the installation of equipment to cost close to $25,000, in a building recently acquired for expansion.

The Wellsville Foundry Corporation, Wellsville, N. Y., has been organized with capital of $20,000 to manufacture

gray iron castings and the plant will be in operation about May 1. O. Delford Fedderman is president and treasurer, and J. Albert McEachern, vice-president and secretary.

New England

BOSTON, April 26.

NEW ENGLAND machinery interests are busy. Machine tool builders are actually pushed to get out equipment wanted, and in some instances orders have been turned down because deliveries on standard stock tools could not be made before August. Such conditions have not been reported before in several years. Machinery dealers also are securing good business and have lists of quotations out which give indications of closing before the end of another month. Machine shops are running full and there is a scarcity of skilled mechanics. Makers of punch press products are exceptionally busy, notably those in Worcester, where in many cases two and three shifts are employed. With the exception of some textile machinery makers, all classes of shops appear to be buying or are interested in equipment. New tools are selling much better than used.

Recent sales include two new side-head boring mills in the Hartford territory; two lathes, a drill press and a tool room lathe to a Western Massachusetts shop; an extra long bed used lathe to a Gilbertville, Mass. shop; two new shapers to the Boston & Maine Railroad; a heavy-duty two-spindle drill, a universal boring machine and a No. 4 universal cutter and tool grinder to a Massachusetts shop; a Gould & Eberhardt shaper to a Worcester plant and a number of bench lathes and hand milling machines to other companies. The Cranston, R. I., Board of Education has closed on woodworking, metal-working, electrical and printing shop equipmet for a junior high school. The Bristol, Conn., Board of Education has purchased a drill press, lathe, planer, power saw, jointer, band saw, two speed lathes, a grinder and electrical equipment for a new school department. Manning, Maxwell & Moore were the low bidders on the list of equipment required by the city of Boston for a school and bids have closed on another list of metal-working tools for an East Boston school. These are but a few of the tools that figure in current sales.

Demand for small tools is also active and it now appears as though bookings for April will exceed those for March, with enough business running over into May to insure a good start for that month.

A permit has been granted the Granite City Ice Co., 550 Adams Street, Quincy, Mass., to erect a one-story artificial ice plant, 70 x 102 ft.

The Cushnoc Paper Co., Augusta, Me., newsprint, is arranging for new paper making machinery and other equipment which will double the capacity of the plant.

Work on the 118th Observation Squadron, United States Army, Hartford, Conn., plant is progressing and will include a machine shop, containing a supply and rigging rooms. It is expected to be completed about June 1.

The Boston Cutting Die Co., 202 A St., South Boston, has purchased 6565 ft. of property on Old Colony Avenue, Cottage and E Streets, on which it proposes to erect a plant this summer.

Landers, Frary & Clark, New Britain, Conn., have placed contract with the Morton C. Tuttle Co., 862 Park Square Building, Boston, for the construction of a reinforced concrete building, 60 x 260 ft., basement and six stories; with wing, 60 x60, basement and six stories, and a two-story bridge between the buildings. In addition to the above there is a one-story reinforced concrete building, 60 x 260. Plans are by the Morton C. Tuttle Co. and construction will start within two weeks.

The Narragansett Sheet Metal Works, 84 Charles Street, Providence, R. I., has recently been incorporated. The business has been conducted as a partnership for some time, but is now run solely by A. Nulman, who previously was a partner.

The Stamford Iron Works, Canal and State Streets, Stamford, Conn., has been reorganized as the Stamford Iron Works, Inc., with capital stock of $10,000, and will continue to operate a general iron works, manufacturing principally ornamental iron products. W. M. Peaston is president.

The Bassick Co., Warren and Austin Streets, Bridgeport, Conn., manufacturer of furniture casters and other hardware products, has awarded a general contract to the Hewlett Co., 886 Main Street, for its one-story brass foundry addition, 100 x 120 ft., and two-story extension, 20 x 80 ft. Fletcher-Thompson, Inc., 542 Fairfield Avenue, is architect.

The Bay State Saw & Tool Co., Lake Street, Winchester, Mass., is said to have plans under way for rebuilding the portion of its plant recently destroyed by fire, with loss in excess of $40,000 including equipment.

The Moores Falls Corporation, Manchester, N. H., a subsidiary of the Amoskeag Mfg. Co., with local textile mill, has plans for a hydroelectric power development at Moores Falls, Litchfield, reported to cost in excess of $400,000.

Edgar B. Spencer, Rocky Hill, Conn., and William H. Walther, 118 Bunker Avenue, Meriden, Conn., are establishing a new foundry at Hartford, Conn., to specialize in the production of gray iron castings. It is expected to have the initial plant ready for service before the close of May. Mr. Walther has recently resigned as superintendent at the plant of the Bradley & Hubbard Mfg. Co., Meriden, and will soon take up a residence at Hartford.

The Dennison Mfg. Co., Framingham, Mass., manufacturer of paper products, has leased three floors in factory No. 2, at the local plant of the R. H. Long Co., and will use for expansion.

Fire, April 20, destroyed a portion of the plant of the Ives Mfg. Co., Wallingford, Conn., manufacturer of augers, bits, tools, etc., with loss reported at $100,000 including equipment. It is planned to rebuild.

The Cape Ann Tool Co., Pigeon Cove, Rockport, Mass., will begin the construction of a one-story forge shop addition, 65 x 130 ft., to cost about $30,000. A boiler plant will also be erected. J. D. De Wolf, 45 Bromfield Street, Boston, is engineer.

The New England Public Service Co., Walter G. Wyman, Augusta, Me., president, has acquired the plant and properties of the Western Maine Power Co., Limerick, Me., operating in Oxford, York and Cumberland Counties. Plans are under consideration for extensions, including transmission line construction.

The Peter Forg Mfg. Co., 45 Park Street, Somerville, Mass., manufacturer of bolts, studs, etc., has awarded a contract to W. Peterson, 10 Loring Street, for an addition, 25 x 54 ft.

The Clover Mfg. Co., Main Street, Norwalk, Conn., manufacturer of grinding equipment, grinding compounds, etc., has plans for a two-story addition, 41 x 85 ft. Davis & Dane, 1024 Main Street, Bridgeport, Conn., are architects.

The New York, New Haven & Hartford Railroad Co., Worcester, Mass., has taken out a permit to build a one-story engine house addition, with repair facilities, at 5 Southbridge Street, to cost $90,000.

A. Brazos & Sons, Inc., Middletown, Conn., has acquired the quarry properties and equipment of the Brainard, Shaler & Hall Quarry Co., Portland, Conn., and will assume control at once. The new owner plans additions and betterments, and will develop a large output of brownstone.

Cleveland

CLEVELAND, April 26.

MACHINE tool sales showed further decline the past week and April business will aggregate somewhat below that of March. Some local dealers have a fair amount of business in prospect, but buyers show a tendency to hold off. The falling off in volume is due very largely to the absence of demand from the automotive industry. Sales to car builders and parts makers seem to be lighter than for several months. Manufacturers of special machinery used in the rubber industry report a good demand for equipment used in reclaiming rubber. No inquiries are coming from the railroads in this territory. A Cleveland manufacturer sold four automatic screw machines for export the past week, but generally export business is light.

The American Fork & Hoe Co., Cleveland, has placed a general contract with the Rice-Jones Co., 620 Union Building, for a three-story factory 40 x 100 ft., to be erected at its Ashtabula, Ohio, plant.

The city of Tiffin, Ohio, contemplates the erection of a waterworks system. M. Wetter is superintendent of waterworks.

The Hardware Specialty Mfg. Co., 118 Seventh Street, Southwest, Canton, Ohio, recently incorporated with capital stock of $20,000, will manufacture hardware specialties. It recently purchased the building formerly occupied by the F. J. Shively Co. and some additional equipment, including punch presses, knife grinders, hardening and tempering furnaces, may soon be required. The company contemplates the erection of a new factory some time this year. The

new building will be approximately 50 x 150 ft., one-story, of simple factory construction. H. S. Ernst is general manager.

Officials of the Ohio Oil Co., Findlay, Ohio, have formed the Ohio-Mexico Oil Corporation, a subsidiary, which has secured properties in Mexico and will install equipment for development, as well as for storage and distributing service. The project is reported to cost in excess of $250,000.

Chicago

CHICAGO, April 26.

THE machine tool market in this district is more quiet than the previous week and from present indications April will fall considerably below March both in sales and inquiry. New inquiry is coming out slowly and railroad and industrial lists before the trade are slow in closing. The demand for small punch presses has been unusually good the past week. Although used machinery has moved in fair volume, dealers find that the unusual number of lists of that class of equipment are tending to make competition very keen.

The Chicago & North Western closed for two small lists, most of the tools, it is believed, being placed through representatives at St. Paul and Minneapolis. The Nash Motors Co., Kenosha, Wis., bought several standard tools and the Rock Island placed a 42-in. combination vertical turret lathe and box-boring machine. The Inland Steel Co. is inquiring for several lathes and purchased a milling machine. A maker of electrical apparatus bought a 14-in. lathe and a Chicago district can manufacturer purchased a 16-in. lathe.

The Hitest Bronze Die Casting Co., will build a two-story factory, 63 x 113-ft. at 900 North Spaulding Avenue, Chicago, to cost $17,500. G. Kehl Sons, 1225 North Maplewood Avenue, is the general contractor.

The All Sheet Metal Works, 2947 Elston Avenue, Chicago, will build a one-story brick factory, 50 x 120 ft. to cost $8,500. G. E. Pearson, 1930 North Keystone Avenue, is the architect.

The McClintic-Marshall Co., 38 South Dearborn Street, Chicago, will build a one-story brick structural fabricating shop to cost $500,000. The architect is J. W. Davis, 38 South Dearborn Street.

The Hans Jensen Mfg. Co., 2055 North Rockwell Street, Chicago, manufacturer of padlocks, will build a one-story addition, 45 x 60 ft. to cost $12,000. Bids will be received through Cobb & Eisenberg, 5 North LaSalle Street.

The Byflex Products Co., North Chicago, Ill., manufacturer of automobile bumpers, suffered a loss by fire of its principal manufacturing unit on April 20. The damage is estimated at $750,000.

The International Harvester Co., 606 South Michigan Avenue, Chicago, has awarded a general contract to the Austin Co. for a one-story addition to its plant at Canton, Ill., 90 x 160 ft., to cost $55,000.

Greenlee Brothers & Co., Rockford, Ill., manufacturers of augers, bits and kindred products, have plans for a one-story addition, 80 x 110 ft., to cost about $30,000 with equipment. It will be used largely as a foundry.

A. S. Alschuler, 28 East Jackson Boulevard, Chicago, architect, has plans under way for a three-story and basement automobile service, repair and garage building, 160 x 400 ft., with machine repair shops, paint shop, etc., on West Congress Street, estimated to cost $850,000.

The City Council, Gillette, Wyo., is considering the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks, estimated to cost $50,000.

D. C. Briggs, city auditor, Miller, S. D., is asking bids until May 10 for extensions and improvements in the municipal electric light and power plant, including one 200-250-kw. steam engine generating unit, with switchboard and accessories. Earle D. Jackson, St. Paul, Minn., is consulting engineer.

R. A. Davis, city clerk, Nevada, Iowa, is asking bids until May 4 for a two-stage air compressor, with short belt-driven motor and pressure tank; also for a centrifugal pump and auxiliary equipment for waterworks service.

The General Metal Spinning Co., 2825 North California Avenue, Chicago, has awarded a general contract to the Mutual Construction Co., 2532 Warren Avenue, for a new one-story plant, 40 x 100 ft., to cost about $85,000 with equipment. B. J. Rappaport, 6709 Lakewood Avenue, is architect.

The Board of Education, Milford, Iowa, is considering the installation of manual training equipment in its proposed two-story high school to cost $125,000, for which bids will soon be asked on a general contract. Buettler & Arnold, Grain Exchange Building, Sioux City, Iowa, are architects.

The City Council, Des Moines, Iowa, has authorized the installation of a pumping plant near Watrous Avenue, with electrically-operated centrifugal pumping unit. K. C. Kastberg is engineer.

The Department of State Highways, 1246 University Avenue, St. Paul, Minn., is asking bids until May 10 for the construction of new maintenance and repair shops for State road equipment at Rochester, Bemidji, Brainerd and Detroit, Minn. Plans at the office of the department.

The Standard Oil Co. of Indiana, Division Street, Evansville, Ind., has plans nearing completion for a new storage and distributing plant at Murphysboro, Ill., with service, repair and garage facilities for company motor trucks and cars. The entire project will cost about $100,000 with equipment.

Detroit

DETROIT, April 27.

CONTRACT has been let by the Shaw-Walker Co., Muskegon, Mich., manufacturer of metal and wood filing equipment, bookcases, etc., to the O. F. Miller Co., Kalamazoo, for a five-story and basement addition, 110 x 215 ft., estimated to cost $250,000 with machinery. Albert Kahn, Inc., Marquette Building, Detroit, is architect. L. R. Walker is secretary and treasurer.

The Armature Service Co., Baldwin, Mich., recently organized, is planning to purchase equipment for installation in a proposed plant for electrical repair and parts work. Fred Felt heads the company.

The Hancock Mfg. Co., Charlotte, Mich., manufacturer of metal trimmings for automobiles, is considering the erection of a new one-story unit, to cost $50,000 with equipment.

R. S. Gerganoff, Moffat Building, Detroit, architect, has completed plans for a one-story automobile service, repair and garage building, 100 x 250 ft., at Ypsilanti, Mich., to cost about $55,000 with equipment.

The Edward G. Budd Mfg. Co., 12141 Charlevoix Avenue, Detroit, manufacturer of steel automobile bodies, etc., will soon begin the erection of a one-story addition, 130 x 550 ft., to cost $400,000 with equipment. Headquarters are at Twenty-fifth Street and Hunting Park Avenue, Philadelphia. Albert Kahn, Inc., Marquette Building, Detroit, is architect.

The Oliver Iron Mining Co., Ishpeming, Mich., is planning the installation of an air compressor and other equipment at its local properties.

The Grand Traverse Auto Co., 130 West Front Street, Traverse City, Mich., will soon begin the erection of a two-story and basement service, repair and garage building, 75 x 135 ft., to cost $65,000. Milton D. Bryant is head.

The Jackson Granite Co., Jackson, Mich., plans extensions and improvements in its plant, including the installation of additional stone-working and other equipment.

Arthur Gifford, Lansing, Mich., inventor of a new type of crank case drain valve, is considering the establishment of a plant for manufacture. A company has been organized, with headquarters in the Wolverine Building, where an assembling works will be operated for the present. It will be known as Instant Service Valves, Inc.

The Kewaunee Mfg. Co., Adrian, Mich., manufacturer of laboratory equipment and furniture, is considering extensions and improvements in its plant. The company maintains headquarters at Kewaunee, Wis., and is arranging for an increase in capital from $250,000 to $600,000 for expansion.

The J. M. Berrenger Co., Flint, Mich., has work under way on a one-story addition to its foundry, to cost about $25,000.

The Hess Airplane Co., Wyandotte, Mich., has leased space in a local factory for the establishment of a new plant for parts production and assembling. It is purposed to increase the size of the works later.

The Holland Steel Corporation, Holland, Mich., has been organized to manufacture a steel-grip wrench. A building has been erected in which all manufacturing will be done except that of making the drop forgings and knurls and pins. T. F. Whelan is president; E. Moore, vice-president; A. Heuer, secretary-treasurer.

The Cadillac Screw Products Co., 1000 Washington Boulevard Building, Detroit, has been incorporated with capital stock of $50,000 to manufacture special bolts, universal joints, etc., for automobiles. The company is in the market for steels of special analysis. M. S. Robertson is secretary-treasurer.

The Taylor Gas Plant Corporation, 18 Division Avenue, N., Grand Rapids, Mich., manufacturer of individual gas producers for suburban and summer homes, hotels, schools and laboratories, has recently been organized and has

equipped a small factory in Grand Rapids. The company is in the market for steel and electric motors.

The Detroit Power Screwdriver Co., 419 Riopelle Street, Detroit, recently incorporated, will manufacture a magazine feed screwdriver. The company's plant has been equipped with the machinery necessary for production. John R. Matthews is secretary.

The Grand Haven Brass Foundry, 618 Lafayette Street, Grand Haven, Mich., is considering plans for a two-story addition, to cost $35,000 with equipment. A. E. Jacobson is general manager.

Gulf States

BIRMINGHAM, April 26.

PLANS have been completed by the Etie Sheet Metal Works, Inc., 1510 Washington Street, Houston, Tex., for a one-story addition, 50 x 110 ft., with two-story building adjoining, 23 x 50 ft., reported to cost $45,000. W. R. Etie is president.

The Merchants' & Manufacturers' Terminal, Inc., Birmingham, will soon begin work on two units of its proposed plant at Avenue B and the Louisville & Nashville Railroad, each two stories, estimated to cost $700,000 with elevating, conveying and other equipment. Later two other buildings will be erected, one three stories and the other two stories, making a total cost close to $2,000,000, with equipment.

The Southland Cotton Oil Co., Mill Street, Jackson, Miss., will proceed with the electrification of its plant, replacing steam-operated equipment with electric apparatus. A contract for power supply has been let to the Mississippi Power & Light Co.

The Greenwood Ice & Fuel Co., Greenwood, Fla., will erect a one-story ice-manufacturing plant on Carrollton Avenue to cost about $35,000. It has also acquired property at Main and Pearl Streets, and is considering a similar plant at this location.

The Dortois Refining Co., Denison, Tex., has leased the plant of the Denison Oil & Refining Co., and will remodel and install additional machinery, including equipment for the production of lubricating oils, greases, etc. The expansion is expected to cost about $65,000.

The Miami Electrotyping & Plating Co., 217 Palermo Avenue, Coral Gables, Fla., recently organized, has acquired the Miami Plating Works and the Miami Electro-Chemical Co., and will consolidate with its business. Plans are under way for the establishment of a new plating works for nickel, copper, silver and other metals. Harry H. Frazier is secretary and general manager.

The St. Petersburg Motors Co., 264 Second Street, St. Petersburg, Fla., has plans for a new service, repair and garage building to cost approximately $100,000 with machinery. T. M. Kelly is general manager.

The Meteor Transport & Trading Co., Miami, Fla., has begun the construction of a new terminal on leased property along the waterfront, with initial buildings to cost in excess of $400,000 with equipment. An overhead conveyor system, sand bins, storage bins, etc., will be installed. The last noted installation will cost about $75,000. W. R. Callaway is president.

The Texas Tinners' Supply Co., Houston, Tex., is planning to purchase equipment for installation at its plant, including a 6 to 12-in. lathe; power drill press; hand-power alligator shears; motors and other industrial electrical equipment; emery wheels and buffing stands, etc.

J. Eberson, 212 East Superior Avenue, Chicago, architect, has been engaged by M. E. Stewart, 1611 Second National Bank Building, Houston, Tex., to prepare plans for a five-story automobile service, repair and garage building, 50 x 100 ft., on Milan Street, Houston, to cost close to $200,000 with equipment.

The Humble Oil & Refining Co., Houston, Tex., has arranged for an increase in capital from $63,750,000 to $75,000,000, a portion of the proceeds to be used for extensions in plant and oil properties.

M. H. Lowrie, Pharr, Tex., and associates, are considering the construction of a one-story cold storage and refrigerating plant to cost $30,000 with equipment.

The Oklahoma Steel Castings Co., Tulsa, Okla., has acquired 10 acres at Houston, Tex., for new branch works, for which plans will soon be drawn. The first unit will consist of several one-story buildings, to be equipped for a monthly output of 300 tons. Other units will be constructed later. The company is now operating a foundry at Tulsa with output of 400 tons monthly, and it is purposed to continue at this place. Ernest H. Cornelius is president.

William A. Lovett, Monroeville, Ala., is considering the establishment of a metal-plating plant and desires to get in touch with manufacturers of equipment and outfits for handling nickel, silver, etc.

Fire, April 15, destroyed a portion of the plant of the Greenville Hoop Co., Greenville, Miss., with loss estimated at $50,000 including machinery. It is planned to rebuild.

J. Thompson & Brothers, Ltd., 223 South Rampart Street, New Orleans, will proceed with the construction of a five-story automobile service, repair and garage building, estimated to cost $120,000 with equipment. Two floors will be equipped as machine and repair shops. W. B. Thompson is president.

The American Sheet Metal Works, Inc., 3500 South Carrollton Street, New Orleans, is contemplating erection of a new one-story plant, 165 x 315 ft., reported to cost $40,000, with equipment.

Hinckley & Sons, Dallas, Tex., recently incorporated with capital stock of $10,000, succeed to the business conducted as a partnership under the same name for the past 18 months. The company manufactures a line of metal products for shoe finding jobbers and building contractors, besides doing a general metal stamping business.

Philadelphia

PHILADELPHIA, April 26.

THE McCahan Sugar Refining & Molasses Co., Front and Chestnut Streets, Philadelphia, has awarded a general contract to F. L. Hoover & Son, 1023 Cherry Street, for a one-story addition, 75 x 330 ft., for distributing and storage, to cost $100,000.

Williams Brothers, Inc., 3078 Helen Street, Philadelphia, automotive equipment, has awarded a contract to Wintz Brothers, 1618 Sellers Street, for a one-story machine shop at 3077-79 Jasper Avenue.

The Philadelphia & Reading Coal & Iron Co., Reading Terminal, Philadelphia, has authorized plans for rebuilding its Alaska colliery coal breaker at Mount Carmel, Pa., destroyed by fire April 17, with loss estimated at $350,000 with machinery. It will be of enlarged capacity and cost in excess of $750,000 with equipment.

O. W. Hoffman, 1531 North Stillman Street, Philadelphia, operating an automobile service, repair and garage business, has plans for a one-story machine shop addition, 100 x 120 ft., to cost $25,000.

The Water Bureau, Philadelphia, will take bids at once for proposed additions in the Belmont pumping plant and filtration works, increasing the capacity by 50,000,000 gal. per day, estimated to cost $500,000 with machinery. Alexander Murdock is chief of the bureau.

The Edwin J. Schoettle Co., 533 North Eleventh Street, Philadelphia, manufacturer of paper boxes and containers, has awarded a general contract to the Nelson-Pedley Construction Co., 1512 Chestnut Street, for a new nine-story factory, to cost $130,000. J. Fletcher Street, 1120 Locust Street, is architect.

A. Edmond Pausser, Philadelphia, has awarded a contract to W. N. Manuel, 5849 Ellsworth Street, for a one-story machine shop at the rear of 738-48 South Forty-second Street, to cost about $18,000 with equipment.

Plans are under way for a reorganization of the J. L. Mott Co., Trenton, N. J., manufacturer of plumbing equipment, sanitary ware, etc., with two local plants, one known as the J. L. Mott Iron Works. It is proposed to sell the property to a group of interests headed by James H. Post, president National Sugar Refining Co., New York; Matthew Scammell, Scammell China Co., Trenton; and Frederick S. Blackall, general manager, Taft-Pierce Co., Woonsocket, R. I. Obligations to an amount of $2,000,000, maturing in June, will be paid, and the company reorganized with new capital in the amount of $1,000,000, continuing plants and production on the same basis as heretofore. The property has been operated under the direction of Charles H. Baker and Robert K. Bowman, receivers, since June, 1924.

The Ajax Rubber Co., Breunig Avenue, Trenton, N. J., manufacturer of automobile tires, etc., has authorized an increase in capital from 500,000 to 1,000,000 shares of stock, no par value, a portion of the fund to be used for expansion.

The secretary of the Department of Property and Supplies, Capitol Building, Harrisburg, Pa., is asking bids until May 11 for equipment and supplies for the fiscal year beginning in June, including engineering and laboratory supplies, hardware supplies, electrical and heating equipment and supplies.

The Hazard Mfg. Co., Wilkes-Barre, Pa., manufacturer of wire rope, cables, etc., will proceed with the installation of machinery in an addition now being completed at a cost of about $300,000, of which more than one-half will be used for equipment.

The Board of Education, North Wales, Pa., is considering the installation of manual training equipment in its proposed two-story high school, to cost $125,000. Irwin T. Catherine, Franklin Trust Building, Philadelphia, is architect.

The Pennsylvania Power & Light Co., Allentown, Pa., is reported to be arranging for the early erection of a second steam-operated electric power plant in the vicinity of Pottsville, Pa., where a station was recently completed. It is estimated to cost $1,500,000 with equipment.

The Bridge Plaza Garage Co., care of the Ballinger Co., Twelfth and Chestnut Streets, Philadelphia, architect and engineer, has plans for a five-story and basement service, repair and garage building at Seventh and Linden Streets, Camden, N. J., to cost approximately $200,000.

Clifford F. Frey, secretary school district of Bethlehem, Pa., is asking bids until May 3 for supplies for the trade and industrial departments of the local schools.

The Bucks-Bensalem Electric Co. has been organized to take over and consolidate the Bucks-Falls, Bucks-Bristol, Bucks-Hulmeville and Bucks-Middleton Electric companies, all operating in Bucks County, Pa. Plans are under way for extensions, including transmission line construction. B. P. Carey, 1000 Chestnut Street, Philadelphia, is one of the heads of the new organization.

The Holstein Rubber Co., Hartford, Conn., manufacturer of rubber flooring, etc., is planning the establishment of a factory branch and distributing plant at Harrisburg, Pa. About 5,000 sq. ft. has been leased on Seventh Street and additional property will be secured.

The Wedge Mechanical House Heating Furnace Co., Paoli National Bank Building, Paoli, Pa., has been organized to manufacture a house heating stoker designed to burn anthracite screenings. The stokers will be built on contract. Uthey Wedge is head of the company.

The Thermovent Co., 2401 Chestnut Street, Philadelphia, has been organized to manufacture forced draft fuel burning apparatus. At present the company is having its parts manufactured on contract. C. G. Reed is president.

St. Louis

ST. LOUIS, April 26.

CONTRACT has been let by the Southern Car Wheel Co., Commonwealth Building, Pittsburgh, manufacturer of railroad car wheels, to the Cornet-Casey Co., Chemical Building, St. Louis, for its proposed one-story foundry, 230 x 420 ft., at 3300 Goodfellow Street, St. Louis, to cost approximately $100,000 with equipment. Robert & Co., Atlanta, Ga., are architects and engineers.

The Community Power & Light Co., Cape Girardeau, Mo., operating light and power utilities in Missouri, Arkansas, Kansas and other states, is disposing of a bond issue of $1,250,000, a portion of the proceeds to be used for extensions and improvements in power plants and system. D. A. Belden is president.

The Polar Wave Ice & Fuel Co., 3638 Olive Street, St. Louis, is arranging for the erection of a one-story, ice-manufacturing plant to cost $65,000 with equipment. H. G. Clymer, Wainwright Building, is architect.

Fire, April 13, destroyed a portion of the plant of the Cushing Refining & Gasoline Co., Cushing, Okla., with loss estimated at $30,000. Plans are under way for rebuilding.

The Missouri Engine Co., 2804 North Eleventh Street, St. Louis, manufacturer of semi-Diesel engines, parts, etc., has awarded a general contract to the Chapline Construction Co., Wainwright Building, for its proposed one and two-story addition, 125 x 145 ft., to cost approximately $80,000 with equipment. Adolph Winkelmeier is president.

Sherritt & Co., 160 North La Salle Street, Chicago, have acquired the electric light and power plant and ice-manufacturing plant at Buffalo, Okla., heretofore operated by Blasdel & Braly. Plans are under way for extensions and the installation of additional machinery.

The Shaffer Oil & Refining Co., Cushing, Okla., has disposed of a note issue of $7,500,000, a portion of the proceeds to be used for expansion and betterments. The present refinery has a daily capacity of 10,000 bbl.

The King Mfg. Co., 230 South Clark Street, Chicago, manufacturer of cast iron lighting standards, etc., has filed plans for its proposed one-story foundry 140 x 480 ft., with two-story office building, 25 x 40 ft., at St. Louis, to cost $100,000 with equipment. C. P. Norris, 1220 South Eleventh Street, St. Louis, has the general erection contract.

R. S. Lander, 2400 East Third Street, Little Rock, Ark., secretary and treasurer of the Shearman Concrete Pipe Co., is said to have acquired the local plant of the company, as well as branch plant at Dallas, Tex., to be operated in the future as an individual enterprise. Plans are under way for extensions in both plants and the installation of additional machinery to cost $100,000.

The Carter Carburetor Co., 2838 North Spring Street, St. Louis, manufacturer of carburetors and other automotive equipment, will begin the erection of a two-story and basement plant, 35 x 50 ft., to cost about $50,000 with equipment. William P. McMahon, 819 Buder Street, is architect.

In addition to recent financing in amount of $4,000,000, the Consolidated Cement Corporation, Fredonia, Kan., is disposing of a note issue of $1,100,000, a part of the proceeds to be used for extensions and improvements. The company, recently organized, has taken over the Fredonia Portland Cement Co., Fredonia; Great Western Portland Cement Co., Mildred, Kan.; and the Peninsula Portland Cement Co., Cement City, Mich. John L. Senior is president.

The Standard Tank & Gauge Co., 606 Atlas Life Building, Tulsa, Okla., was recently incorporated with capital stock of 10,000 shares of no par value, but is not yet ready to make definite announcement regarding its manufacturing plans. W. J. Donohue is president.

The Columbia Belt Hook & Mfg. Co., is the new name of the Columbia Novelty Mfg. Co., St. Louis, the latter corporation having been dissolved late last year. The business of the old company has been removed to Los Angeles, and the Columbia Belt Hook & Mfg. Co. is now occupying new buildings erected for the manufacture of its products, which include tumbling barrels, power and foot presses, dies, special tools and special machines.

Cincinnati

CINCINNATI, April 26.

A FURTHER recession in machine tool sales has taken place the past week. Unless there is a sudden spurt of buying in the last few days of the month, the volume of business in April will fall considerably short of that in March. While there are a number of inquiries before the trade, the majority is for single machines. Local builders state that the bulk of orders is coming from the general industrial field, whereas the automotive industry was the most important source of business a few months ago. Railroad buying has been negligible.

The Nash Motors Corporation is expected to purchase a number of lathes within the next ten days. Planer manufacturers are operating at a fairly satisfactory rate and at least one builder is running overtime to fill current orders. The Cincinnati Planer Co. has booked a 48-in. planer for Cuban delivery and a 36-in. Hypro machine in the Pittsburgh territory. Demand for shapers is less active than a few weeks ago, but inquiries are heavy. M. W. Jones, Philadelphia, has bought a 16-in. shaper, and the John Steptoe Co. sold a 20-in. machine in Kansas City. Lathe builders having special equipment to offer report that production is steady, and in some cases deliveries cannot be made in less than six to eight weeks. However, the market for standard lathes is spotty. An automobile maker in the Detroit district has bought five lathes, and the Michigan Central Railroad has closed for a lathe. A local builder has received an order for three lathes for shipment to South America.

Sales of turret lathes equal those in March, which was a good month. Activities in milling machines and grinders have tapered off somewhat in the past two weeks. Manufacturers of upright and radial drills report a decided falling off in orders since April 1. The Roxana Petroleum Corporation, St. Louis, has bought a 600-lb. single frame steam hammer from the Niles-Bement-Pond Co. The latter also has booked a 350-lb. single frame steam hammer for the Pacific Gas & Electric Co., San Francisco. The Inland Steel Co., Chicago, has purchased a Ransom grinder and the Gary Tube Co., Gary, Ind., a 20-in. Aurora drill. The Packard Motor Car Co., Detroit, is the buyer of a special universal machine. The Mechanical Appliance Co., Los Angeles, has bought a Grand Rapids universal grinder, while the Ohio Nut & Washer Co., Mingo Junction, Ohio, has contracted for a 16-in. x 8-ft. Morris lathe. Three local companies have each taken a Pratt & Whitney jig borer.

In the used machinery market the Bucyrus Co., South Milwaukee, has bought a 10-ft. x 10-ft. x 46-ft. Pond four-head reversing motor-driven planer. The Foundry Service Corporation, Freeport, L. I., has purchased a 36-in. lathe, and the Pryibil Machine Co., New York City, has closed for a 50-in. x 36-ft. x 10-ft. Pond planer.

The Columbus Union Oil Cloth Co., Seventh Avenue and Big Four Railroad, Columbus, Ohio, has taken bids for a

boiler house. R. H. Wilcox is president. Bassett & Treselt, 401 Central Bank Building, are the architects.

The State Highway Department, Columbus, Ohio, has tentative plans for a one-story machine and repair shop, with automobile service and garage building at Chillicothe, Ohio, for State road equipment, to cost about $55,000. G. M. Anderson, Central National Bank Building, Chillicothe, is division engineer.

The Michaels Art Bronze Co., 236 Scott Street, Covington, Ky., has plans nearing completion for an addition, to cost about $40,000. B. T. Wisenall, Union Central Building, Cincinnati, is architect.

The Samuels Stamping & Enameling Co., Chattanooga, Tenn., S. S. Price, 646 Vine Street, representative, recently organized, is concluding arrangements for a site near the Market Street bridge and will have plans drawn for three buildings, main structure to be 80 x 175 ft., to cost about $70,000. The company will manufacture enameled iron specialties, stamped metal goods, etc. W. R. Samuels is president.

Merrill B. Parker, 1912 Oak Street, Chattanooga, Tenn., has inquiries out for a 36-in. planer with 8-ft. bed, Powell type preferred.

The Kentucky Power Co., Augusta, Ky., has plans for a one-story ice-manufacturing plant, to cost about $40,000 with equipment. J. D. Lyon, Southern Railway Building, Cincinnati, is consulting engineer.

The Board of Education, Columbus, Ohio, contemplates the installation of manual training equipment in its proposed three-story junior and senior high school on Powell Avenue, estimated to cost $800,000. H. D. Smith, 207 East State Street, is architect.

The City Council, Lookout Mountain, Tenn., contemplates the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks, estimated to cost $35,000.

The Ohio Valley Pulley Works, Inc., Maysville, Ky., manufacturer of wooden pulleys, etc., has plans for a one-story addition, 60 x 300 ft., to cost $60,000 with equipment. S. P. Browning is vice-president and treasurer. Samuel Hannaford & Sons, Dixie Terminal Building, Cincinnati, are architects and engineers.

The American Metal-Craft Works & Sales Co., 9 West Fourth Street, Cincinnati, has been incorporated with capital stock of $10,000 to manufacture and act as distributer for other manufacturers of such products as bronze and brass plates; steel, bronze and brass grilles, brass railing, iron and wire window guards, folding gates, sidewalk and cellar doors, iron railing, balconies, wire work, iron and wire fence. The company has no present intention of erecting a plant. W. T. Hutcheson is secretary.

Milwaukee

MILWAUKEE, April 26.

BUILDERS of machine tools have experienced a relatively satisfactory volume of business so far in April. Shops are kept busy executing orders, and new business is developing in a manner that should sustain production at the present rate, despite an apparent lessening of interest in recent weeks. Locally, buying of shop equipment is virtually as active as before, and foundries and machine shops still complain of an inadequate supply of skilled workmen.

The Waukesha Motor Co., 125 St. Paul Avenue, West, Waukesha, Wis., has awarded contracts for a one-story brick and steel shop addition, 65 x 164 ft., and is inquiring for miscellaneous equipment for the production of motor truck, motor bus and other heavy duty multiple-cylinder gasoline engines. H. L. Horning is president and general manager.

The Hamilton Aero Mfg. Co., Milwaukee, manufacturer of propellers, is contemplating enlargement of its plant in Cudahy, to facilitate the construction of complete aircraft. Experimental work has been under way for more than four years. Thomas F. Hamilton is president and chief engineer.

The Milwaukee Electric Railway & Light Co., 217 Sycamore Street, Milwaukee, will expend about $300,000 in adding a fifth story and remodeling the present four stories of the Public Service Building, its terminal, on Sycamore, from Second to Third Streets. R. H. Pinkley is vice-president in charge of construction, and Fred H. Luber is company architectural engineer.

The Antigo, Wis., Common Council has accepted the bid of $92,585 entered by the Manitowoc Construction Co. for the erection of a new sewage disposal plant and system designed by the Jerry Donohue Engineering Co., Sheboygan, Wis. G. O. Palmiter is city clerk.

The Times-Call Building Corporation, Racine, Wis., identified with the Racine *Times-Call*, daily newspaper, has accepted plans by Frank J. Hoffman, local architect, for the construction of a five-story addition, costing about $75,000 complete. Bids will be taken May 1. W. S. Goodland is president and editor.

South Atlantic States

BALTIMORE, April 26.

BIDS will be asked within a week by the Motor Ramp Co. of Maryland, Inc., 11 East Lexington Street Baltimore, F. N. Iglehart, vice-president, for its proposed six-story automobile service, repair and garage building, 100 x 100 ft., with two and one-half story extension, 25 x 100 ft., to cost about $300,000 with equipment. Parker & Shaffer, 280 Madison Avenue, New York, are architects.

The Reid-Avery Co., Twenty-first and Washington Streets, Philadelphia, manufacturer of wire goods, has acquired property at St. Helena, Baltimore, as a site for new plant, estimated to cost about $100,000 with equipment. It is purposed to remove the present works to the new location and increase the capacity. Marshall Reid is president.

The United States Navy Department, Washington, has asked an appropriation of $2,535,000 for extensions at the Puget Sound Navy Yard, Seattle, of which $1,310,000 will be used for a new yard crane, and $1,000,000 for a proposed machine and electrical shop. An urgent request for another appropriation of $9,000,000 has been made, the fund to be used at the Pearl Harbor naval base, Hawaii, the improvements to include a floating dry-dock to cost $5,000,000 and $1,150,000 for buildings and mechanical equipment for the naval air stations.

The Broad River Power Co., Columbia, S. C., is disposing of a bond issue of $1,485,000, a portion of the fund to be used for extensions and improvements in power plant and transmission system. The company is operated by the General Gas & Electric Corporation, 50 Pine Street, New York. W. S. Barstow is head of both companies.

The Industrial Committee, T. E. Bruce, chairman, Chamber of Commerce, Scottsville, Va., has inquiries out for machinery for a pulp wood mill.

The North State Feldspar Corporation, Micaville, N. C., has acquired additional mining properties, known as the Goog Rock feldspar mines, Yancy County, N. C., and is considering the installation of equipment for increased capacity.

The Magneto & Machine Co., 1031 Cathedral Street, Baltimore, is said to be completing plans for its proposed three-story addition, including improvements in present plant, to cost close to $75,000. S. Gordon T. Parks is president.

The United States Coast Guard Headquarters, Washington, will receive bids until May 15 for 31 to 35 pump sets and outfits, direct-connected to electric motors.

C. O. Wurzberger & Son, Annapolis Avenue, Baltimore, manufacturers of sash, doors and general millwork products, have preliminary plans for an addition to double approximately the present output, to cost $60,000 with machinery.

The Virginia Public Service Co., Alexandria, Va., has arranged for a bond issue of $5,000,000, a portion of the proceeds to be used for expansion in power plants and system, including the purchase of a controlling interest in the Newport News & Hampton Railway, Gas & Electric Co., Newport News, Va. A. E. Fitkin, head of A. E. Fitkin & Co., 165 Broadway, New York, is president.

Motors, power equipment, conveying and other machinery will be installed in the three-story and basement printing plant, 50 x 190 ft., to be erected by the Charlotte Observer, Charlotte, N. C., Curtis B. Johnson, president, estimated to cost $400,000. Lockwood, Greene & Co., Johnston Building, are architects and engineers.

The Club Aluminum Co., 105 West Twentieth Street, New York, manufacturer of cast aluminum kitchen ware, with headquarters at Chicago, has leased a floor in the Gibbs Industrial Building, East Biddle Street, Baltimore, formerly the plant of the Columbia Graphophone Co., for a new branch works. Machinery will be installed to give employment to about 200 operatives, with about 3,500 sq. ft. of floor space given over to manufacturing. William A. Burdette is president.

The Motor Service Co., 310 South Salisbury Street, Raleigh, N. C., has plans for a three-story service, repair and garage building, 90 x 150 ft., to cost about $100,000 with equipment. It is understood that a portion of the building will be occupied by the local Stutz automobile agency. P. W. Gower, president.

The City Council, Decatur, Ga., is considering the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks, for which bonds for $60,000 have been approved.

A controlling interest in the Blue Ridge Power Co., Hendersonville, N. C., the Manufacturers' Power Co., operating in the same section, and affiliated utilities, has been acquired by the General Gas & Electric Corporation, 50 Pine Street, New York. The properties will be consolidated and operated in conjunction with the South Carolina Gas & Electric Co., Spartanburg, S. C., owned by the purchasing company. Plans are under advisement for extensions and improvements in power plants and system.

William Knage & Co., Eutaw and West Streets, Baltimore, manufacturers of pianos, a division of the American Piano Co., 439 Fifth Avenue, New York, has tentative plans for a new six-story factory, totaling about 50,000 sq. ft. of floor space, to increase the present capacity more than one-fourth.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has been making inquiries for a screw-cutting lathe, with counter-shaft, compound rest, etc.; one double-drum skeleton hoist; two-drum 30 hp. electric hoist, with geared swinger; and one 2200-volt oil switch, General Electric type.

The Dixie Fireproofing Co., Carrs Station, near Sparta, Ga., will electrify its brick-manufacturing plant, replacing all present steam-operated equipment with electric apparatus. A contract for power supply has been let to the Georgia Southern Power Co.

The Surry Lumber Co., Dendron, Va., is considering rebuilding its machine shop destroyed by fire April 12, with loss reported at $50,000 including equipment.

The Southern Public Utilities Co., Charlotte, N. C., is considering the installation of pumping machinery in connection with extensions and improvements in its water system at Anderson, S. C., estimated to cost $35,000. Harry Orr is manager.

The Columbia Cabinet & Mfg. Co., Hardin Street, Columbia, S. C., is planning the purchase of a dove-tailing machine for automobile battery box production.

The Tidewater Power Co., Wilmington, N. C., will make extensions and improvements to cost about $25,000. An automatic power substation will be built for service in the Carolina Beach section.

Pittsburgh

PITTSBURGH, April 26.

NUMEROUS single tool orders which have been pending for some time were placed the past week and April, consequently, promises to be a fairly good month in point of actual business. New inquiries are in fair volume and much attention is focussed at present on the Jones & Laughlin Steel Corporation, which is taking prices on equipment for two new butt weld pipe furnaces.

Plans have been filed by the Steel City Electric Co., 1207 Columbus Avenue, Pittsburgh, manufacturer of electrical equipment, for an addition to cost $30,000.

The Clinton Iron & Steel Co., West Carson Street, Pittsburgh, has applied for permission to construct and operate a coke-unloading plant on the left bank of the Monongahela River, near the Wabash Bridge.

The Aluminum Co. of America, Inc., Oliver Building, Pittsburgh, has preliminary plans for a new one-story wire mill at Massena, N. Y., 150 x 310 ft., estimated to cost $350,000 with equipment. It is expected to proceed with the project in June.

The Board of Education, Bluefield, W. Va., contemplates the installation of manual training equipment in its proposed local Ramsey junior high school to cost $125,000, for which bids have been asked on a general contract. Garry & Sherrey, First National Bank Building, are architects.

The Guyan Machine Shops, Logan, W. Va., machinery dealers, have inquiries out for a wheel lathe, suitable for turning tires for mine locomotives up to 36-in. diameter, also for a boring mill capable of handling work up to 30 x 36 in., one grinder for milling cutter service, and index centers for milling machine.

The Warwick Coal Co., First National Bank Building, Pittsburgh, will make extensions in its coal tipple in Monongahela Township, Greene County; additional machinery will be installed and a derrick will be constructed.

The Doubleday-Hill Electric Co., 719-21 Liberty Avenue, Pittsburgh, manufacturer of industrial electrical equipment, is disposing of a bond issue of $250,000, a portion of the proceeds to be used for expansion. The company plans the early removal to a new building at 110-12 Seventh Street, where facilities will be provided for increased output. G. Brown Hill is president.

The Pennsylvania Railroad Co., Pittsburgh, has arranged a tentative program for extensions and improvements in this district during the remainder of the year, including additions to the boiler and plate shops at the Pitcairn, Pa., yards, primarily for locomotive boiler work, estimated to cost $60,000; new scrap handling crane at Conway, Pa.; mechanical loading station at Thomson, Pa.; development of property on Sixteenth Street, Pittsburgh, for freight house service, with complete mechanical handling and conveying equipment, and miscellaneous work. The complete program is reported to cost $13,000,000.

J. Tokar, 219 Lloyd Avenue, Latrobe, Pa., and associates have tentative plans for a two-story automobile service, repair and garage building, 50 x 100 ft., to cost approximately $55,000 with equipment.

Indiana

INDIANAPOLIS, April 26.

BIDS have been asked by the S. G. Taylor Chain Co., 140 South Dearborn Street, Chicago, manufacturer of iron and steel chains, etc., for a one-story addition to its plant at Hammond, Ind., 60 x 100 ft. Frank D. Chase, Inc., 720 North Michigan Avenue, is architect and engineer.

The real estate, buildings, machine tools and other equipment of the Ansted Engineering Co., Connersville, Ind., manufacturer of engines, clutches, etc., will be offered at a public sale by the receivers, Arthur Dixon and Hyatt L. Frost, on May 11-13, inclusive.

The Board of Education, Gary, Ind., plans the installation of manual training equipment in the proposed addition to the Horace Mann High School, estimated to cost $50,000, for which bids will soon be asked on a general contract. William B. Ittner, Board of Education Building, St. Louis, is architect.

G. I. Sellers & Sons, Elwood, Ind., manufacturers of kitchen cabinets, etc., will soon begin work on a one-story addition, with extension to power house, estimated to cost $80,000 with equipment. W. A. Risinger, Elwood, is architect; Snider & Rotz, Indianapolis, are engineers.

The McLaughlin Mill Supply Co., 163 Michigan Avenue, Hammond, Ind., has tentative plans for a three-story and basement addition, 70 x 95 ft., reported to cost $60,000. Actual erection may be deferred for several weeks.

The Overhead Door Corporation, Hartford City, Ind., will proceed with the construction of a one-story addition by day labor, to cost $23,000 with equipment. The company manufactures door hangers and kindred products.

The Board of Education, Hammond, Ind., is considering the construction of a second unit at the technical high school, two stories, 60 x 115 ft., estimated to cost $65,000 to include manual training and other divisions.

The New Process Steel & Iron Works, Noblesville, Ind., will soon take bids for a one-story addition, 100 x 200 ft. A considerable portion of the structure will be equipped for bar storage. F. Kinnear is president.

The Board of Education, Saratoga, Ind., plans the installation of manual training equipment in its proposed new high and grade school to cost $100,000, for which bids have been asked on a general contract. Houck & Smenner, Muncie, Ind., are architects.

Pacific Coast

SAN FRANCISCO, April 21.

PLANS are being prepared by the Pacific Gas & Electric Co., 245 Market Street, San Francisco, for a new mechanical works at San Rafael, Cal., consisting of machine shop, electric meter repair shop and laboratory, estimated to cost $35,000.

The Board of Education, Whittier, Cal., has plans for a one-story addition to the manual training building at the local high school, 60 x 170 ft., to cost about $40,000. It is expected to begin work soon. Lloyd Rally, Wright-Callender Building, Los Angeles, is architect.

J. S. West & Co., Modesto, Cal., will soon begin the construction of a new one-story refrigerating and cold storage plant, to cost $50,000 with equipment. Norman S. West is manager.

The Pacific Straw Board & Paper Co., Longview, Wash., has tentative plans for extensions and improvements, including the installation of considerable additional equipment. The entire project is reported to cost close to $75,000.

In connection with proposed additions to its mill, the Washington Pulp & Paper Corporation, Port Angeles, Wash., is completing plans for the early construction of a hydro-electric generating station on the Elwha River, near Glines Canyon, with an initial capacity of 10,000 hp.

Emory M. Frasier, Insurance Exchange Building, Los Angeles, architect, has plans for a three-story automobile service, repair and garage building at 1823 South Hope Street, 50 x 145 ft., to cost about $75,000 with equipment.

The Board of City Trustees, Redlands, Cal., is considering the installation of pumping machinery in connection with proposed extensions and improvements in the municipal waterworks estimated to cost $525,000, in which amount bonds have been voted.

The Longview Foundry & Mfg. Co., Longview, Wash., has plans under way for new works on Arkansas Street, consisting of three buildings, 88 x 100 ft., 40 x 42 ft., and 28 x 40 ft.

The Tieton Fruit Growers' Association, Tieton, Wash., is contemplating the erection of a new cold storage and refrigerating plant estimated to cost $50,000.

The Blaine Mfg. Co-Operative Co., Blaine, Wash., has tentative plans for rebuilding the portion of its shingle mill destroyed by fire April 18, with loss estimated at $55,000 including equipment.

The Puget Sound Power & Light Co., Seattle, is disposing of a bond issue of $5,000,000, a portion of the proceeds to be used for extensions and improvements in power plants and sytem.

The Board of Education, Portland, Ore., will install a manual training department in its proposed two-story Woodlawn school, for which bids will soon be asked on a general contract. It will cost about $250,000. G. H. Jones is school architect.

The Balmer Hydraulic Drill Corporation, Los Angeles, has been organized with capital stock of $100,000 to manufacture the Balmer rotary drill for oil well drilling. No plans for manufacturing will be made until public demonstrations of the new drill have been made. The company's affiairs are in the hands of Youngworth, McClean & Hartman, Merchants National Bank Building, Los Angeles.

Canada

TORONTO, April 26.

THE Canadian machine tool market has not recovered from the set back resulting from the lowering of the tariff on automobiles which has affected plants even to the point where some have found it necessary to close down. This attitude by motor car makers may be but temporary, but its effect on machine tool business has been rather severe during the past week or ten days. The following statement by W. R. Campbell of the Ford Motor Co. of Canada, Ford, Ont., gives an idea of the effect tariff reductions have had on the machinery industry of this country. "When the cut in the tariff was announced the Ford Motor Co. of Canada, Ltd., was about to install new dies to be used in the manufacture of certain types of bodies. With a reduction of 15 per cent in the duty on foreign made cars, it became an open question as to whether it would not pay the company to purchase the stampings in the United States and thus save the capital cost of machinery. At the present time the matter is in abeyance and no decision will be made until the company has had an opportunity of reviewing condi1tions under the new tariff."

This action on the part of the Ford company is but one of many like situations that have developed in the past week or two. Those industries which have not been affected by the tariff, however, are maintaining a steady demand for single tools. The railroads are buying for car shops and a stronger demand is reported from builders of rolling stock and railroad equipment. Used machinery is also in good demand.

The Consolidated Advertising Service, 73 Richmond Street, West, Toronto, is asking for Gridley 1¾-in., 1⅝-in. and 1¼-in. multiple four-spindle automatic screw machines.

The Goderich Mfg. Co., Goderich, Ont., will have plans prepared for the erection of a wood-working factory on Maitland Street to cost $50,000.

F. L. Buchanan, 73 Coldwater Street, Orillia, Ont., plans to build a machine shop on Front Street. He has perfected a motor, a single cylinder unit suitable for small boats, and it is for the manufacture of these motors that the new plant will be erected.

The Exolon Co., Thorold, Ont., manufacturer of abrasives, etc., is asking bids for the erection of an addition to cost $150,000. Contract for the transformer room has been let to the Standard Steel Construction Co., 22 Cross Street, Welland, Ont.

The International Nickel Co., Port Colborne, Ont., has awarded a general contract for a plant addition to Ceccketto & Knight, Oak Street, Sudbury, Ont., and the steel contract to the Standard Steel Construction Co., 22 Cross Street, Welland, Ont.

Gonzaque Tremblay, Duhamel, Que., is building a sawmill estimated to cost $25,000. Some machinery will be required.

The Brompton Pulp & Paper Co., East Angus, Que., proposes to make improvements and repairs to its local shops.

The Quebec Railway Light, Heat & Power Co., 229 St. Joseph Street, Quebec, will call for bids next month for the construction of car barns and shops at Limoilou, Que., estimated to cost $400,000.

The Quebec Industrial Alcohol Co., 9 St. John Street, Montreal, will award contracts soon for the erection of a distillery at Sorel, Que., to cost $500,000.

Foreign

BIDS have been asked by the municipality of Ovideo, Spain, with no specified date of closing, for the construction of a public market with complete refrigerating equipment, ice-handling and other mechanical apparatus. Bidders are asked to submit plans and description of equipment with prices. The complete project is estimated to cost $594,000. The American Consulate, Madrid, Spain, Charles H. Cunningham, commercial attaché, has information regarding the enterprise.

The American-Belgian Chamber of Commerce in Belgium, 48 Rue de Naples, Brussels, Belgium, has received an inquiry (reference 278) from a Belgian company desiring to get in touch with American manufacturers of machines for tool handle production.

The Russian Soviet Commission for the development of a hydroelectric and irrigation project in Ukrainia is now in this country, care of the Amtorg Trading Corporation, 165 Broadway, New York, official purchasing agency for the Soviet Government in the United States. The commission, headed by Joseph A. Tzichevsky, chairman, purposes to develop plans for the enterprise, arranging for financing and equipment. The project provides for a hydroelectric generating station on the Dnieper River, near Alexandrovsk, with initial capacity of 210,000 kw. and ultimate output of 455,000 kw., with transmission system for power service for the manganese and iron fields in this section. An airline railroad is to be constructed for a distance of about 300 miles. The development is estimated to cost $70,000,000 with equipment.

Plans are maturing for the construction of a packing plant at Gualeguachu, Argentina, to include a refrigerating and cold storage plant, machine and mechanical shop, wood-working shop, by-products division for the production of tallow, etc., with complete mechanical equipment, elevating and conveying apparatus for handling hides and other materials. Information at the office of the Bureau of Foreign and Domestic Commerce, Washington, reserved reference 36925; data also at the American Consulate, Buenos Aires, Argentina, Brice M. Mace, Jr., trade commissioner.

The American Chamber of Commerce in France, 32 Rue Taitbout, Paris, has received an inquiry (B-3249) from a company in Alsace, desiring to get in touch with American manufacturers of kitchen utensils and general hardware.

Allis-Chalmers Mfg. Co., Milwaukee, had an increase in 1925 of 11.41 per cent in orders booked as compared with 1924, the totals being $28,944,412 and $25,979,420. Net income of $3,971,368 was equal to $8.70 a share earned on the common stock, while in 1924 the net of $3,756,100 was equivalent to $8.02 a share. Profit and loss surplus as of Dec. 31 totaled $14,259,302, comparing with $13,542,987 in 1924. The balance sheet showed total assets of $63,784,804, against $62,737,589 at the end of 1924. Current assets at the close of last year were $21,541,078 and current liabilities $5,257,714.

The Benstock & Rosenberg Brothers, Inc., Buffalo, has filed articles of incorporation at Albany. It is capitalized at $50,000 and is authorized to deal in woods and metals.

Trade Changes

William W. Runyon and William W. Runyon, Jr., have organized the Runyon Steel Co., which will engage in the scrap iron and steel business at 1019 Beaver Avenue, Pittsburgh, N. S. The company has acquired the storage yard and equipment of the Stalnaker Steel Co. William W. Runyon, Jr., who will be general manager, has been associated for the past five years with the Max Solomon Co., Oliver Building, Pittsburgh. Previously he had been in charge of the Neville Island scrap depot, Ordnance Department, United States Army. Prior to the war Mr. Runyon had been in the operating and sales departments, Wheeling Steel Corporation.

The Watson-Stillman Co., 50 Church Street, New York, designer and builder of hydraulic machinery and equipment, has established a branch sales office at 7752 Duboise Street, Detroit. Earle M. Porter, who has a wide acquaintance in machinery circles in that territory, has been appointed manager.

Contracts have been awarded by F. J. Ryan & Co., industrial heating, for the construction of an office building and shop at Hunting Park and Wissahickon Avenue, Philadelphia. These new facilities will make available over five times the present space and therein will be carried out the construction and testing of burners and automatic combustion and temperature control devices, as well as certain standard furnace equipment. There will be installed complete testing laboratory for use within the industrial heating field. All departments of the business will be consolidated.

The Fate-Root-Heath Co., Plymouth, Ohio, manufacturer of Plymouth locomotives, has placed John H. Neafie and George H. Fanning, with offices at 50 Church Street, New York, in charge of the district sales office for the New York territory. James A. Ridgway will continue to act as district sales representative for the New England territory.

The Michigan Surplus Materials Co., 534 West Congress Street, Detroit, has changed its name, effective May 1, to the M. Prussiam Machinery Co.

The Bessemer Gas Engine Co., 94 Pearl Street, Boston, has leased space on the sixth floor of 131 State Street that city.

The Robert June Engineering Management Organization, Detroit, has moved to larger quarters at 2208 West Grand Boulevard, where it now occupies the entire building. This is the fourth move in four years to larger quarters.

Townsend & Co., Inc., maker of tools, jigs, dies, gages and other precision machine work, is occupying a new building at Lewis and Sycamore Streets, Camden, N. J. Samuel E. Townsend is president.

The Elyria Iron & Steel Co., Cleveland, which operates plants both in Cleveland and Elyria, has purchased the business of the Superior Metal Products Co., Elyria, maker of metal stampings. Hugh B. Wick is president of both companies.

The United States Welding Co., Minneapolis, has been consolidated with the Harris Calorific Co., 2823 Washington Avenue, N. W., Cleveland, and the plant and offices of the former company have been moved to Cleveland. Both have been engaged in the manufacture of gas welding apparatus. New officers of the Harris company include John Harris, chairman of the board; George B. Harris, president; Loren Campbell, Jr., vice-president and general manager; John M. Mathews, secretary.

The American Manganese Steel Co., 5805 Downey Road, Los Angeles, has added to its transformer equipment, increasing its productive capacity by 25 per cent. The company is a branch of the company located at Chicago Heights, Ill., and has been established in Los Angeles for about a year.

The Blake Electric Mfg. Co., 255 Atlantic Avenue, Boston, has been appointed New England sales agent for the Triumph Electric Co., builder of motors, Cincinnati, Sanford Brown, receiver.

The A. B. Murray Co., Inc., iron merchant, has moved from 88 Washington Street, New York, where it has been located since 1845, to 110 Washington Street.

The Seattle branch of the Simonds Saw & Steel Co., Fitchburg, Mass., has leased about 30,000 sq. ft. in the Moran Building at First Avenue, South, and Holgate Street, Seattle. It has been operating a warehouse and office at 410 Occidental Avenue, Seattle, which will be removed to the new quarters. T. M. Shields is Seattle manager.

The Fisher Engineering Corporation, Tacoma, Wash., is removing its business to Seattle.

THE LAST WORD

IF the florists, the paint manufacturers, the gas companies, the photo-engravers, the machine tool builders, and a few hundred more assorted industries can flaunt their slogans before the wide world, why not those of the metal trades (the greatest of all industries), who do not place themselves in a particular classification? Here is a starter, "Make it of metal." If you think of a better one, send it in.

A wealthy gentleman, bedeviled by several daughters of the flapper age, is pictured in the April issue of the *Red Book*, reading THE IRON AGE. The gentleman is the central character in a story by Robert Benchley, erstwhile editor of *Life*. Driven from room to room by the unquiet members of the widely advertised younger generation, he finds peace at last in the cellar. The interest with which he is devouring the "Easter Number" of THE IRON AGE makes it apparent that his subscription will be renewed promptly on expiration.

He is paid for staring out of the window. On the roof of the New York Edison Company's service building is a small observation tower. In it is a man who does nothing but watch the gases coming from the eight stacks of the big Waterside central station. The instant he sees any change in the color and volume of the gases, he signals the boiler room, for the appearance of the gases indicates with what efficiency the boilers are being operated. This is said to be the only job of its kind in the world, so the Flue Gas Observers' Union will not be formed just yet.

"Are steel-frame houses safer than wood in earthquake areas?" a San Francisco banker inquires. Of course, the answer is emphatically *yes*. What a field in Japan for light fabricated steel!

Is it not true that in your business the absence of brickbats rather than the presence of bouquets denotes the customer's satisfaction? True, too, in the publishing industry. But here is a bouquet from F. W. Benham of the Stanley Works, the big hardware manufacturer:

"I have read THE IRON AGE for fifty years and I still read—yes, study—it more assiduously than ever. Its reliability, judgment and poise are qualities one may depend on. What is a first requisite in my work is *certainteed* news and market trends, all of which the AGE affords. Prof. Haney's forecasts are helpful."

That grinning tormentor in your cellar, the coal furnace, may in turn be the harassed one. Menaced first by the oil burner, now Dr. Stratton, head of Massachusetts "Tech," prophesies that eventually we shall all be heating our homes with fuel supplied through a pipe in the form of either gas or steam. Speed the day! But what of the summer? Will some genius kindly step forward with a practical idea on storing gas economically, for surely the plants at the mines should work all the year round.

Have you observed the activity in the ornamental iron industry? Almost all the shops are busy. The reason is that architects and owners are awakening to possibilities of ornamental iron in practically every kind of building construction.

I had the temerity to ask Dr. Haney, our business forecaster, how he calculated his P-V Line. "That's my secret, part of my stock in trade," he replied. Properly squelched, I had to be content with the explanation that changes in the ratio of commodity *price* to commodity *volume* forewarns of changes in business conditions. If you doubt it, chart the P-V Line against your own business curve. A. H. D.